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SEEING ALL THINGS IN SPACE

Kant and the Reality of Space in the Context of Early Modern Philosophy

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In May 2006, at a seminar on Leibniz in Uppsala, with Lilli Alanen and John Carriero, I had the great pleasure and honour of making acquaintance with Olli Koistinen. I made a remark on Kant's metaphysics, which Olli did not think was particularly accurate. But to my surprise, Olli later chatted me up, and it turned out that he had taken keen interest in Kant's lectures on metaphysics.

Olli's understanding of the lectures resonated well with mine, namely that they reveal a more relaxed Kant, a Kant ready to unlock the keys to his metaphysics, once so familiar to his students. Unlocking Kant's metaphysics involves, more precisely, understanding it in the context of early modern philosophy. Thus, Kant's original attempt to uncover the ideality of the world, the soul, and God, starts to make sense once we consider what he has to say about their substantiality, which brings him into dialogue with early modern philosophy.

The following year I attended a seminar, in the company of Camilla Serck-Hansen and Christel Fricke, arranged by the department of philosophy, at the University of Turku. For me personally, this was a first opportunity to air some thoughts about Kant's metaphysics, and to familiarise myself with the Rationalist Circle. From that moment, the Rationalist Circle became my philosophical family.

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ABSTRACT

One of the basic concepts of the metaphysics of the pre-critical Kant is the early modern, Leibnizian concept of the world as a synthetic whole of simple substances. Space is the order according to which these simple substances coexist, in the presence of God. Kant's turn to critical philosophy contained a re-evaluation of Leibnizian metaphysics. Space is an ideal form of sensibility, not a real order of coexisting simple substances. This dissertation argues that Kant's critical turn inspired him to outline a new science of subjective space – the Transcendental Aesthetic.

Leibnizians argued that our knowledge of space is innate, but still abstracted from the common sense idea of extension. In the *Critique of Pure Reason* Kant responded that this misrepresents our knowledge of the subjective space, which is the topic of the Transcendental Aesthetic. An exposition of the marks of the concept of subjective space not only shows that space is a form of sensibility, but that it is a continuous, actually infinite whole, which precedes its potentially infinite parts. In Kant's terminology space is an analytic whole, which gives a key to the ideality of space, according to this dissertation.

One important topic in the literature concerns Kant's awareness of the Leibnizian alternative that space might be both a form of sensibility and an order of coexistence. This dissertation claims that Kant could not rule out this alternative completely. However, in one aspect, Kant was successful: Leibnizians had to admit that continuity belongs to space, not as an order of coexistence, but as a form of sensibility. We see all things in continuous space, not in God. However, seeing things in space is analogous to seeing them in God.

Keywords: metaphysics, early modern philosophy, space, ideality

TIIVISTELMÄ

Kantin niin sanotun esikriittisen metafysiikan yksi leibnizilaisista peruskäsityksistä on, että maailma on yksinkertaisten substanssien muodostama synteettinen kokonaisuus. Tässä näkemyksessä avaruus on järjestys, jonka mukaisesti yksinkertaiset substanssit ovat yhdessä olemassa Jumalan läsnäollessa. Kantin kriittiseen filosofiaan sisältyy leibnizilaisen metafysiikan uudelleen arviointi. Sen sijaan, että avaruus olisi yhdessä olemassa olevien yksinkertaisten substanssien reaallinen järjestys, avaruus on aistimellisuuden ideaali muoto. Tässä väitöskirjassa esitetään, kuinka Kantin kriittinen käänne sai hänet hahmottelemaan uuden subjektiivisen avaruuden tieteen – transsendentaalisen estetiikan.

Leibnizilaiset väittivät, että tietomme avaruudesta on sisäsyntyistä, joskin abstrahoitu arkiajatteluunkin kuuluvasta ulotteisuuden ideasta. *Puhtaan järjen kritiikissä* Kant puolestaan väittää, että leibnizilaiset vääristävät tietomme subjektiivisesta avaruudesta, joka on aiheena transsendentaalisessa estetiikassa. Subjektiivisen avaruuden käsitteen erittely osoittaa, että avaruus on paitsi aistimellisuuden muoto, myös jatkuva, aktuaalisesti ääretön kokonaisuus, joka edeltää sen potentiaalisesti äärettömiä osia. Kantin terminologiassa avaruus on analyttinen kokonaisuus, joka tässä väitöskirjassa esitetyn perusteella toimii avaimena avaruuden ideaalisuuteen.

Tutkimuskirjallisuudessa tärkeä aihe on, miten tietoinen Kant oli leibnizilaisesta vaihtoehdosta, että avaruus saattaisi olla sekä aistimellisuuden muoto että yhdessä olemisen järjestys. Tässä väitöskirjassa esitetään, ettei Kant voinut kokonaan sulkea pois tätä vaihtoehtoa. Yhdessä mielessä Kant kuitenkin onnistui: leibnizilaiset olivat pakotettuja myöntämään, että jatkuvuus kuuluu avaruuteen aistimellisuuden muotona eikä yhdessä olemisen järjestyksenä. Näemme kaikki oliot jatkumollisessa avaruudessa, emme Jumalassa. Niiden näkeminen avaruudessa on kuitenkin analogista niiden näkemiselle Jumalassa.

Asiasanat: metafysiikka, uuden ajan alun filosofia, avaruus, idealismi

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1. Introduction

1.1 Background

One of the fundamental claims made in the transcendental philosophy of Immanuel Kant (1724-1804) is that space is not real. Thus, according to Kant, space is the way that coexisting things are given to our sensibility, not the container or relation in which they coexist independently of our sensibility. In Kant's terminology space is not a "determination" (*Bestimmung*) of things in themselves, but *merely* a form of sensibility.¹ From now on, I will therefore refer to this metaphysical thesis about space as Kant's "transcendental ideality claim".

One way of addressing the transcendental ideality claim is to consider it in the context of Kant's intellectual development. Roughly, and with much simplification, one can divide Kant's intellectual development into three major periods: the pre-critical period from 1746 to 1770, the silent decade from 1771 to 1781 and the critical period from 1781 to his death 1804. In addition to this, it is also common to divide the pre-critical period into two periods: the dogmatic period 1746-1760 and then the sceptical or empirical period from about 1761-1769.

Often the turn from the pre-critical period to the critical period is associated with the year 1769, the year when a "great light" fell upon Kant, according to his own recollections.² What makes the critical turn important is that it records Kant's first documented efforts to defend the transcendental ideality claim. The main points of the critical turn are, I think, nicely summarised by Benno Erdmann (1851-1921), in his introduction to *Reflexionen Kants zur Kritischen Philosophie*:

Thus the epoch-making discovery of the year 1769, is (1) the specific distinction between the sensibility and the understanding, (2) the [transcendental] ideality of space and time, and thereby the preparation for (3) the distinction between phenomenon and noumenon, briefly the transcendental idealism, which first is developed for us in the dissertation from the year 1770 *de mundi sensibilis atque intelligibilis forma et principiis*, [and] which we, now enriched by this term itself, retrieve in the Cosmology of the Critique of the Pure Reason, as a result of the [Transcendental] Aesthetic.³

Erdmann not only suggested that the critical turn revolved around three very specific claims, but he also had a very definite hypothesis about why Kant made these claims and how they are interconnected. Thus, according to Erdmann, Kant's claims were a highly elaborate response to a deep-seated conflict in 18th century Germany, between Newtonian oriented mathematicians and Leibnizian oriented metaphysicians. Whereas mathematicians dealt with mathematical bodies, like spheres, which were indeterminate with respect to the number of their parts and their size, metaphysicians dealt with real bodies, which were determinate in this respect. Though each party could have it their own way, as long as they kept to their special fields, problems ensued as soon as they entered their common arena – physics.

¹ A26/B42.

² *Reflexionen zur Metaphysik*, Nr. 5037, Ak. 18, p. 69.

³ My translation, J.J. Erdmann (1884, p. xlv). Numbering added by me, J.J.

To the metaphysicians it was clear from the outset that a physical body, like a silver ball, must conform to the impeccable standards of their thinking. This means for instance that we can expect the silver ball to have a definite radius, from which we can calculate its volume, etc. The very same standards also told the metaphysician that the silver ball must consist of a determinate number of parts, which is only possible if these parts, in their turn, consist of determinate parts, until we reach the ultimately simple parts, which are without parts. Physical bodies are, for short, nothing but finite wholes of ultimately simple elements, and what holds for the physical bodies holds for the world as well, for the world is nothing but a gigantic physical body or machine.

To this, the mathematicians answered that the metaphysicians failed to realise that the sphere is a spherical part of space, which is continuous and hence indefinite with respect to its parts. Even if the spherical part of space, which the silver ball fills, has a finite size, this is not true of space as a whole, which is of indeterminate size and hence mathematically infinite. So, unless the metaphysicians were ready to accept that the world is surrounded by an empty space, they would have to recognise that the world is also mathematically infinite.

Leibnizians had different strategies to cope with this challenge, as will be seen. On the one hand, they could insist that physical bodies and the world are finite, with respect to both their extension and the number of their parts. On the other hand, they could recognise that their critics had a point, and accept the possibility that the number of parts of physical bodies is actually infinite, and that this holds for the world as well. Metaphysics cannot answer one of the most fundamental question of cosmology, namely whether the world is finite or infinite. From the point of view of pure reason, it is perfectly possible that both the thesis and the antithesis are true.

On Erdmann's interpretation, the contradictions or antinomies inherent to Leibnizian cosmology are the key to Kant's critical turn and, in fact, even his entire transcendental philosophy.⁴ The critical turn was a transcendental turn, a turn towards transcendental philosophy, which made it possible for Kant to recognise the body purely as an appearance, and to trace this transcendently ideal representation back to its sources, in either the sensibility or the understanding. Moreover, Erdmann also argued that large parts of Kant's transcendental philosophy were contained in the solution of the antinomies in the *Critique of Pure Reason*, and that the Transcendental Aesthetic had a particular role in granting this solution.

This study tries to present a somewhat novel reading of Kant's transcendental ideality claim and the arguments he gave for it. My reading will evolve against the background of a discussion of the developments in Kant's thinking, which led to the transcendental turn. In this discussion, I have tried to follow Kant's own texts as carefully as possible. This means that I have considered not only Kant's published works, but also his letters and handwritten notes on metaphysics.⁵ Occasionally I have also used Kant's lectures on metaphysics, in the cases when they prove to be consistent with each other, and with the ideas expressed by Kant in his own handwritten notes.⁶

In my reading of Kant's texts, I have tried to follow the principle of charity. I have put the main burden on myself as a reader, in those cases when I have stumbled upon passages and arguments in

⁴ Erdmann (1884, pp. xxv-xxvii).

⁵ Kant's published works are contained in volumes 1-9 of the *Akademie* edition of Kant's collected works. The letters are contained in volumes 10-11, and the handwritten notes and fragments in volumes 14-19. In this study I have mainly used Kant's handwritten notes on Alexander Baumgarten's (1714-1762) textbook on metaphysics, which are contained in volume 15 and volumes 17-18 of the *Akademie* edition.

⁶ I have mainly used the lecture notes which are contained in volumes 28-29 in the *Akademie* edition.

Kant's texts, which I have found difficult to interpret and understand.⁷ In these efforts, I have mainly supported myself with books, papers, and letters of thinkers which Kant was personally familiar with and reckoned as important. I have put less emphasis on secondary commentaries, unless I have deemed that they are helpful to emphasise or understand the points Kant tries to make.

The general picture, which emerges from my reading, is that ideas, which originated from early modern philosophy in general, and Leibnizian metaphysics in particular, were important factors behind the transcendental turn. More specifically, I will argue that Kant presented the fragments of a new science of space, a kind of proto-version of the Transcendental Aesthetic in the course of these developments. I will also argue that these fragments will help us to reconsider and understand Kant's arguments for the transcendental ideality claim in the Transcendental Aesthetic. Thanks to this, we are also in a better position to understand Kant's response to the Leibnizian critics of the transcendental ideality claim.

The disposition of the rest of this chapter is as follows. *Sections two, three and four* deal with previous discussions of Kant's intellectual development and the transcendental turn. *Sections five and six* contain a discussion of Kant's new science of space, i.e. his proto-version of the Transcendental Aesthetic. *Section seven* contains an outline of a new reading of Kant's inaugural dissertation, where he first presented his new science of space. *Section eight* summarises the implications which the previous studies have for the interpretation of Kant's arguments for the transcendental ideality claim, as he presents them in the Transcendental Aesthetic. *Section nine*, finally, contains an overview of the subsequent chapters.

1.2. Previous Studies of the Dogmatic Period

One recurrent theme in the literature on the dogmatic period concerns the question of Newton's relative influence on Kant. Schönfeld for instance interprets Kant's pre-critical thinking as an attempt to integrate Newtonian physics in a universally comprehensive philosophy of nature.⁸ However, Kant scholars like Erdmann, Eric Watkins and Anja Jauernig reject this reading.⁹ In their interpretation, influences from Newton were not as decisive for Kant's philosophical development as his desire to solve the metaphysical problems he inherited from his rationalist predecessors, Leibniz and Wolff.

Leibniz had argued that extended bodies in space ultimately are aggregates of ontologically and causally independent monads or simple substances.¹⁰ However, this seems to generate an antinomy between the body as on one hand a continuous phenomenon in space and on the other hand a discrete whole of monads or simple substances. Here we cannot just declare that one of the incompatible predicates is false, but we must demonstrate how it is possible for something discrete to show itself

⁷ Markus Nikkarla's recent study of Kant's transcendental deductions gives a good example of how to apply the principle of charity, which is close to my own understanding of the principle; see Nikkarla (2017, pp. 26-7).

⁸ Schönfeld (2000, pp. 3-14).

⁹ Jauernig (2008, pp. 41-2), Watkins (2005, pp. 1-180), Erdmann (1884, p. xiv); for similar views, see Paulsen (1875, pp. 29-30).

¹⁰ *Monadology* §§ 1-3, G VI 607, AG 213. For a discussion of the concept of ontological independency in the philosophy of Kant, see Warren (2001, pp. 37-58). For a broader discussion of the connection between the notions of ontological independency, causal independency simplicity, substance and conceptual independency, outside the context of Kantian philosophy, see Koistinen/Viljanen (2009, pp. 2-3).

as a continuous phenomenon in space. In other words, demonstrate how it is possible for actually infinitely divided wholes of simple, indivisible substances to be localised in space and become parts of extended bodies, which are potentially infinitely divisible.

Though the scope of the problem of the antinomy seems restricted to the metaphysics of bodies, it actually also reproduces itself in cosmology as well. Like the material bodies, the world is on one hand a continuous whole of outer phenomena in space, but on the other hand also a discrete whole of simple substances. Furthermore, if God has made the simple substances (monads) ontologically and causally independent of each other, how can one explain that these simple substances exist and are localised in the same outer world?

Leibniz had answered that monads could be connected with each other because they are harmonized with each other by God, from the outset of their creation.¹¹ However, contemporaries of Leibniz, like Foucher, had pointed out that Leibniz's theory of the pre-established harmony seemed to make the outer world superfluous; if the monads and their states exist independently of each other it was equally thinkable that each monad existed with God, in a world of its own.¹²

Watkins argues that Kant responded by outlining a new cosmology, based on the theory of physical influx he inherited from his teacher Knutzen.¹³ In Kant's revised version of this theory, all simple substances depend on God as the common cause of their existence, which explains why they coexist and interact in spite of their ontological and causal independence. Simple substances are not monads, but physical monads, endowed with repulsive and attractive forces, by virtue of which they occupy a definite space. Discrete composites of physical monads are perfectly unextended, but by virtue of their repulsive forces they still occupy a continuous, extended space.

However, if it is true that Kant worked with Leibnizian themes in the pre-critical period and perhaps throughout his career, as Erdmann, Watkins, and Jauernig argue, how then should we explain the critical turn or transition from the pre-critical period to the critical period? Did the critical turn take place at all, or would it be better to speak about a smooth transition from pre-critical to critical philosophy?

Watkins tends to lean to the latter conclusion.¹⁴ Thus, although Watkins recognises the discontinuities between the pre-critical and the critical period, he also underlines that there are some continuities between them. For instance, Kant never abandoned the cosmology of simple substances he outlined during the pre-critical period, although he made it a matter of belief, based on practical reason.¹⁵ Erdmann on the other hand emphasises that the critical turn was a decisive transformation of Kant's thinking, and that the transcendental ideality claim was a decisive feature of this transformation. Erdmann also argues that this claim can be seen as a solution to the antinomy inherent to Leibniz's cosmology, for if space is a form of external phenomena only, and not the monads, then it follows that continuity and infinite divisibility only belongs to the phenomenon of the world, not to the world in itself.¹⁶

Though Erdmann's explanation is very close to the truth, it does provoke an objection, recently made by Falkenstein, namely that Kant suggests a solution to the antinomy already in the pre-critical period.¹⁷ To repeat, monads are physical monads, according to the pre-critical Kant, so even

¹¹ *New System*, G IV 484-5, AG 144.

¹² *Objections de M. Foucher*, G IV 488-9.

¹³ Watkins (2005, pp. 1-180).

¹⁴ Watkins (2005, pp. 181-4).

¹⁵ Watkins (2005, pp. 182).

¹⁶ Erdmann (1882, p. 31) and Erdmann (1884, pp. xxiv-xxviii, xxx-xxxvii).

¹⁷ Falkenstein (2004, pp. 300-1).

if the monads are indivisible, the spheres of activity of the repulsive forces of these monads are continuous and infinitely divisible.

In this work, I will argue that the studies of Schönfeld and Carpenter provide a better explanation of Kant's rejection of the physical monadology, which also makes it possible to understand the developments which led to the transcendental turn.¹⁸ Kant had to revise the earliest version of his metaphysics and cosmology, but not because of the antinomies. Rather he revised his own thinking because he wanted to explain how it is possible for a thinking soul to interact with its body, without having to assume that the soul fills a place in the body like a physical monad. Let us now consider this interpretation in some closer detail.

1.3 Previous Studies of the Sceptical Period

Kant's first efforts to revise the metaphysics of physical monads are visible in his lectures and unpublished writings during the early 1760s. Many commentators have noticed that Kant's questioning of the physical monadology seems to be rooted in deeper-seated doubts about the meaning, purpose and validity of metaphysics in general and Leibnizian and Wolffian metaphysics in particular. On the surface, it looks like the standard account of Kant's intellectual development, according to which Kant turned away from the dogmatic, rationalist metaphysics he had defended in the earliest stage of the pre-critical period (1746-1760) is well supported.

In Kuno Fischer's classic version of the events, Kant's encounter with Hume was decisive for the break with the dogmatic period.¹⁹ Accordingly, it was Kant's reading of Hume that made him realise that real grounds are different from logical grounds, i.e. that causes do not entail their effects in the same way as a logical ground entails a consequence. This rupture marked the beginning of Kant's sceptical period, which Friedrich Paulsen and Erdmann also associated with the transition from rationalism to "empiricism" or "critical empiricism".²⁰ More recently, Beiser has described the early 1760s as the "period of disillusionment"²¹ marked by a break with "rationalist epistemology" and the rejection of all metaphysics that "transcends the limits of experience."²²

However, Beiser does not attribute any role to Hume in Kant's transition from dogmatism to scepticism; according to Beiser it was Kant's reading of Rousseau that made him convinced of the flaws of rationalist metaphysics, in particular with respect to its notion of the ends of all human intellectual activity.²³ Beiser's reading is in this sense opposed to the reading defended by Watkins, in which Hume's influence was decisive for Kant's distinction between logical and real grounds and which in turn made it possible for him to improve the ontological framework behind the theory of physical influx.²⁴ Thus, according to Watkins Kant's reading of Hume did not make him a

¹⁸ Schönfeld (2000), Carpenter (1998).

¹⁹ Fischer (1897, pp. 138, 290-7); for an interpretation in the same tradition, see Vaihinger (1881, pp. 46-8).

²⁰ Paulsen (1875, p. 37); Erdmann (1884, p. xvii). Note that both Paulsen and Erdmann deny that Hume had anything to do with Kant's alleged transition to empiricism in the early 1760s, although Paulsen, surprisingly, seems to be prepared to recognise an influence on an indirect, almost subconscious level. For a discussion of Paulsen's and Erdmann's take on Kant's Hume reception, see Lauener (1969, pp. 8-9).

²¹ Beiser (1999, p. 26).

²² Beiser (1999, p. 26). See also Beiser (1999, pp. 37, 42-3) for further details.

²³ Beiser (1999, pp. 43-4)

²⁴ Watkins (2005, pp. 160-70).

scepticist about metaphysics, although it propelled him to reconsider and improve the method of doing metaphysics.²⁵

Schönfeld presents a promising alternative to both Beiser's and Watkin's interpretations. Though Schönfeld recognises an influence from both Rousseau and Hume, he puts more emphasis on the internal difficulties that haunted Kant's pre-critical project.²⁶ Thus, according to Schönfeld, Kant's intellectual crisis was associated with a growing insight into the weakness of his metaphysical foundations of Newtonian physics, particularly with respect to its arguments for the teleological purposiveness of nature, the freedom in man's moral actions, and the existence of God.²⁷ In particular, Kant came to realise that he was unable to explain how the soul is united with the body, without making the soul localised in space like a physical monad.²⁸

Regardless of Newton's relative influence on Kant's metaphysics and cosmology of physical monads, Schönfeld identifies a problem which also seems relevant for interpretations of Kant's pre-critical project, such as the one defended by Erdmann, Watkins, or Jauernig. As Andrew Carpenter argues, Kant's metaphysics of physical monads seemed to entail that the soul can be a part of the world, only if it occupies a place in space.²⁹ For if my body consists of physical monads, which interact with other physical monads, by virtue of being endowed with forces of repulsion and attraction, it follows that my soul can be united with and interact with the body, only if it occupies and fills a space within my body.

In this study, I will argue that the materialist implications of Kant's metaphysics of physical monads were an important reason why he had to abandon it. In the 1760s Kant worked on the hypothesis that the soul can act on its body, namely insofar it is aware of the inner, perceptual states of the monadic parts of the body. This meant that Kant had to assume that the physical monads must be able to perceive and not just move. However, as I will try to show, Kant failed to explain how it was possible for the monadic parts to in turn act on the soul. Thus, Kant once again recognised that the physical monads of the body could not act on and be present to something, except locally.

Instead, Kant began to search for other ways of preserving the immateriality of the soul and still explain how it is possible for it to interact with the forces of its body. In this study, I will argue that this explains why Kant put so much effort into the study of the faculty of sensibility in the late 1760s, for it is by virtue of its sensibility that the soul is causally affected by its body. Part of this project was the effort to develop a novel notion of the sensibility of the thinking soul. From this point of view, Kant's interests were shifting somewhat, from cosmology to rational psychology.

We should now be able to consider the rationales behind Kant's distinction between the sensibility and understanding, which brings us to point (1) in Erdmann's summary of the transcendental turn. Given the interpretation of Kant's intellectual crisis described above, we can trace the distinction between sensibility and understanding back to the need to more carefully identify and describe the passive and receptive faculty of the soul, as distinct from its active and spontaneous faculty.

²⁵ Interestingly Erdmann (1884, p. xx) also takes the distinction between real and logical grounds to have contributed to Kant's transition from dogmatism to "critical empiricism". However, Hume did not play any role in this transition. Instead, the decisive factor behind Kant's transition from dogmatic metaphysics, according to Erdmann, was the insight that it leads to the antinomies between the finite and infinite division and extension of the world.

²⁶ Schönfeld (2000, p. 189).

²⁷ Schönfeld (2000, pp. 209-10).

²⁸ Schönfeld (2000, pp. 242-4).

²⁹ Carpenter (1998, pp. 130-43).

Falkenstein interestingly notes that the distinction between sensibility and understanding is merely “postulated” in Kant’s critical works.³⁰ Falkenstein explains this by reference to the fact that Kant simply took this distinction to be obvious for his readers.³¹ On Falkenstein’s interpretation, Kant reinvented the distinction from the Aristotelian tradition, but loaded it with connotations that it originally did not have. Thus, Kant conceived sensibility not just as a faculty of singular representations, but also as a passive faculty of intuitive representations.³² Conversely he conceived the understanding not only as the faculty of universal representations but also as a spontaneous faculty of conceptual representations.³³

Much like Erdmann, Falkenstein takes the distinction between sensibility and understanding to be fundamental to the critical turn.³⁴ Falkenstein suggests that it might have grown out of Kant’s rejection of the “one-faculty account” of human cognition, which he attributes to Leibniz and Locke respectively.³⁵ However, this seems a little bit difficult to understand, for at least Leibniz certainly recognised more than one faculty of representation and this also holds for Wolff and Baumgarten.³⁶ Moreover, Falkenstein’s explanation of Kant’s two-faculty account makes it difficult to connect it with Schönfeld’s account of Kant’s troubles with the problem of the mind-body union.

In this study, I will argue that Kant already was familiar with the distinction between sensibility and understanding, from his reading of Leibniz, Wolff, and most notably Baumgarten. Kant had no need to make any detour through Aristotle, as Falkenstein argues. It is of course an oft repeated wisdom that Kant criticised Leibniz, Wolff, and Baumgarten for having failed to recognise that the distinction between sensibility and understanding is a real distinction and not just a logical distinction. Sensibility is a profoundly passive faculty and not just a faculty of confused representations, as Leibniz, Wolff and Baumgarten had argued.

However, what is important to keep in mind is the reasons why Kant rejected the view of his predecessors, namely that it cannot explain how it is possible for sensibility to be causally affected by outer bodies. Because of their commitment to the theory of the pre-established harmony, Leibniz, Wolff, and Baumgarten failed to explain how sensations are causally linked to the outer world; the sensations could equally well be the outcome of God’s immediate actions on the soul, so that we see all things, not in space, but in God.

Kant’s main drive in the late 1760s was not to introduce a two-faculty model, but a causal two-faculty model, consistent with the theory of physical influx yet free from any materialist implications. From this point of view, Falkenstein’s reading needs revision. Fortunately, Falkenstein has a deeper, more subtle explanation of the origins of the two-faculty account, which might turn out to be helpful in untangling this interpretative knot. In order to give justice to this explanation, it is better to consider it in the entire context of Kant’s transcendental turn, which is the next topic.

³⁰ Falkenstein (2004, pp. 28-9).

³¹ Falkenstein (2004, pp. 29-32).

³² Falkenstein (2004, pp. 31-2, 44-7).

³³ Falkenstein (2004, pp. 31-2, 44-7).

³⁴ Falkenstein (2004, pp. 32-3).

³⁵ Falkenstein (2004, pp. 32-3).

³⁶ For a discussion of the distinction between sensibility and understanding in the psychologies of Wolff and Baumgarten, see École (1991, pp. 269-70).

1.4 Interpreting the Transcendental Turn

Many interpreters have tried to explain Kant's critical turn, by arguing, once again, that Kant fell under the spell of Hume. Paulsen for instance seems prepared to ascribe almost magical forces to the sceptical Scotsman: there was a kinship between the philosophical views of Kant and Hume already in the 1760s, but none of this occurred to Kant until the end of the 1760s and the beginning of the 1770s.³⁷ According to Paulsen, this kinship mainly came to expression in their shared view that we cannot know the existence of things and facts solely by inferences from concepts.³⁸

Disregarding the question of the merits of Paulsen's account of Hume's influence, his interpretation seems to be crowded with difficulties of its own. How can we explain the rationalist traits of Kant's critical turn, and the period subsequent to his empiricist/sceptical phase? Hans Vaihinger, who suggests that Kant suddenly came under the "overwhelming" (*übermächtigen*) influence of Leibniz at the end of the 1760s, seems more convincing from that point of view.³⁹ The trouble with Vaihinger's version of the story on the other hand, is that it does not explain how Kant's rejection of scepticism (or empiricism) was connected with the critical aspect of Kant's transcendental turn; on Vaihinger's interpretation Kant's abandonment of Hume's scepticism led him, initially, to accept a slightly revised version of the old, reactionary dogmatic metaphysics of Leibniz.⁴⁰ The latter makes it necessary for Vaihinger to assume that Kant had to be woken up from his dogmatic slumbers, not only one time, but even two times – 1760 and 1771 – and that Hume was responsible for the wakeup calls in both cases.⁴¹

Erdmann proposes an interpretation of the critical turn, which tries to avoid the dilemmas of Paulsen and Vaihinger, which Beiser has taken up more recently.⁴² Thus, according to Erdmann the transcendental ideality claim was motivated by Kant's attempt to find a solution to the antinomy that was inherent in the concept of the outer world as, on one hand, an actually finitely or infinitely divided composite of discrete monads, and, on the other hand, an infinitely divisible whole of continuous appearances. The awareness of the antinomies awoke Kant from his "dogmatic slumber", already in the early 1760s, according to Erdmann; likewise, it was the solution of the antinomies, which made it possible for him to shake off the paralysing grip of scepticism.⁴³

Erdmann argues that Kant found the key to the solution of the antinomies in the distinction between sensibility and intellect, which suggested that it is possible to solve the antinomies by making a distinction between the objects that sensibility encounters and the objects of the intellect.⁴⁴ This explains why Kant found it necessary to make a distinction between noumena and phenomena, between bodies as substantial composites of monads and bodies as appearances in space and time. Thus the solution of the antinomies is the common root of both point (1) and point (3) in Erdmann's account of the critical turn. Ultimately, the solution of the antinomies is the key, not only to the understanding of the critical turn but also to Kant's entire transcendental idealism, according to Erdmann.

³⁷ Paulsen (1875, pp. 47-53, 96-100).

³⁸ Paulsen (1875, pp. 96-100).

³⁹ Vaihinger (1881, p. 48).

⁴⁰ Vaihinger (1881, p. 48).

⁴¹ Vaihinger (1881, p. 48).

⁴² Beiser (1999, p. 29).

⁴³ Erdmann (1882, p. 31) and Erdmann (1884, pp. xxiv-xxviii, xxx-xxxvii).

⁴⁴ Erdmann (1884, pp. xxiv-xxv).

Erdmann also argues that the solution of the antinomies gives the key to point (2) in his account of the transcendental turn.⁴⁵ On the assumption that space is transcendently ideal it follows that we can solve the antinomies, and this provides us an indirect or experimental proof of the transcendental ideality claim. Thus, given that space is transcendently ideal, it follows that bodies in space are mere representations or outer phenomena. There are no substantial composites of simple substances in space. Bodies in space are no more finitely divided than infinitely divided. The antinomy of the world as actually finitely and infinitely extended in space disappears for similar reasons.

To me it seems as if Erdmann is correct about the importance of the antinomies of cosmology for Kant's critical turn. However, the problem is that Erdmann makes the antinomies a global theme of Kant's intellectual development during the pre-critical period. Even if the distinction between sensibility and understanding is an important condition of Kant's solution of the antinomies and the critical turn, it seems difficult to make the antinomies the main or sole explanation of this distinction, in particular since they cannot be the root cause of Kant's intellectual crisis in the 1760s, as we have seen.

In this study, I will try to argue that Kant's distinction between matter and form of knowledge is the key to his distinction between sensibility and understanding, which made it possible for him to analyse the former faculty as a purely passive faculty. The distinction between matter and form belonged to Kant's academic education, but his correspondence with the astronomer, mathematician and philosopher Johann Heinrich Lambert (1728-1777) certainly brought it to his attention in the mid-1760s, if not earlier, as will be seen. Sensation is the *matter* of all knowledge, but since there is no sensation of space, it follows that space belongs to the *form* of knowledge, not its matter, contrary to what Lambert argued in his letters to Kant.⁴⁶

In this study, I will argue that these considerations make it possible to reconsider point (2) in Erdmann's summary, i.e. the transcendental ideality claim. For if space is *only* a form of sensible knowledge – a form of sensibility – it follows that the bodily substrate, with which the thinking soul interacts, is unextended. Hence, the bodily substrate is no more extended than the soul itself, which means that the problem of the heterogeneity of the body and the soul cancels, as Karl Ameriks has pointed out.⁴⁷ The spatially situated body, which gives the thinking soul its point of view, is merely the appearance of the substrate of its body. There is no need to conceive the mind as a physical monad localised in space, for its place is nothing but the point of view, from which its sensations are oriented outside it. Thus, it is exactly because space is a form of sensibility that the body of the mind appears in the midst of the world, so that we see all things in space from the determinate orientation of our bodily point of view and not in God.

Thanks to this, we can connect Kant's dogmatic period and his intellectual crisis, with the transcendental turn. The same problem, which contributed to Kant's intellectual crises – the problem of the materialist implications of the physical monadology – also finds its solution in the transcendental ideality of space. There is no need to take recourse to Erdmann's global explanation of the transition from the dogmatic period to the transcendental turn, according to which it was driven by the need to solve the antinomies growing out of Leibnizian cosmology.

⁴⁵ Erdmann (1884, pp. xxvi-xxxii).

⁴⁶ *Correspondence*, pp. 77-8, Ak. 10, pp. 51-2.

⁴⁷ Ameriks (1999, pp. 270-1); see also *Metaphysik Mrongovius*, Ak. 29, pp. 907-8, which records Kant's lectures on the problem of the heterogeneity of the soul and the body, as he conceived it during the critical period.

True, Kant must have been aware of the true or apparent contradictions in the cosmologies of Leibniz, Wolff, and Baumgarten – Kant’s physical monadology is in some sense nothing but an elaborated attempt to solve the antinomy between mathematical space as a continuous whole of indefinite parts and the cosmological space of simple substances as a discrete whole of mathematical points. However, it was the materialist implications of his physical monadology, which generated the problem that found its solution in the distinction between sensibility and understanding, and in the transcendental ideality claim. From that point of view, the solution of the antinomies of cosmology just came as an extra bonus on the top of the other important benefits, which were associated with the critical turn.

Falkenstein presents an alternative explanation of the transcendental turn and the distinction between phenomena and noumena. Like Erdmann, Falkenstein suggests that this distinction made it possible for Kant to solve or eliminate the antinomies (“paradoxes of composition and division”), but contrary to Erdmann, he takes the distinction to originate from the two-faculty account, mentioned above.⁴⁸ In this context, Falkenstein plays with the hypothesis that the two-faculty account had a deeper-seated origin in Kant’s reflections on the *concept* which the *intellect* (“reason”) forms of space. In the late 1760s, Kant came to the insight that understanding cannot form a concept of space by reflection, for that only presents it to a species or genus, namely place or extension in general. Mathematical construction is of no help here, for it only offers the intellect the familiar spaces of Euclidean geometry, lines, angles, circles, etc.

In the end, the understanding distorts the original phenomenon of space and misconceives it, by taking recourse to traditional metaphysical concepts, such as substance, accident etc., which leads to spurious concepts of space as a thing in its own right, or as an accident or relation between things. Kant’s great light of 1769 was nothing but the surprising insight that this concept is a pure concept, which is different from all other pure metaphysical concepts that the understanding or reason forms. The first step necessary in order to dissolve the spurious concepts is to trace the representation of space back to its origin, which presupposes the two-faculty distinction at the heart of the transcendental turn. Let us now consider this issue in closer detail, in order to see how it might fit into the reading I will defend in this work.

1.5 The Transcendental Turn and the Concept of Space

The account presented above immediately provokes at least two questions: what is the original representation of space and how does it relate to the intellect’s concept of space? In the late 1760s, Kant gives an answer to the first question, which is relatively frank, namely that it is a “pure singular concept”, i.e. an a priori pure intuition. What this seems to suggest is that we have an almost mystical vision of space, which is prior to the things we experience. We see all things in a prior vision of an all-encompassing and all-present space, which is infinite in both extent and depth – a vision strikingly similar to the mystic, direct experience of God, who is present to everything and everyone, both heathen and believer.

Unfortunately, this interpretation just seems to raise more questions than it answers, for it suggests that the original representation of space is passively and immediately given to the sensibility prior to any sensation.⁴⁹ If for no other reason, this seems absurd because it makes the original

⁴⁸ Falkenstein (2004, pp. 34-41).

⁴⁹ For an overview and critique of this view, see Falkenstein (2004, pp. 83-9).

representation of space into something analogous to a sensation, without being a sensation. How can a transcendently ideal structure of the mind or sensibility affect sensibility itself, giving us a representation of space or time prior to our experience of outer things?⁵⁰

It comes as no surprise that Falkenstein rejects this interpretation, which he labels as the “forms-as-representation reading”.⁵¹ In this context, Falkenstein suggests that there is no given representation of space, other than as a form of outer appearances, which is the *order* in which outer sensations and appearances are *given*. Hence, although this order is a priori and innate to the mind, it never *appears* to the sensibility in its pure form, apart from the sensed matters, colours sounds, etc. The specific locations of the sensed matter in this order is not innate but grounded outside the mind.⁵² Sensibility does not assemble the *sensa*, like the pieces of a jigsaw puzzle, but rather follows the contours of a ready given picture.

Falkenstein also claims that Kant gets himself in great difficulties when he tries to answer the second question above, i.e. the question of how our understanding can ever acquire something such as a concept of space. In his inaugural dissertation which was published 1770, just a year after the year of the great light, Kant even seems to deny that space and time are capable of an intellectual intuition (“intellectual representation”), as Falkenstein observes.⁵³ This is of course just what we can expect, according to Falkenstein, given that representations of space and time are singular concepts or intuitions, and that understanding only abstracts and cannot have any intuitions, as the two-faculty account predicts.

Kant seems to end in a kind of philosophical limbo, trapped between an absurd non-receptive intuition of space and an abstract and empty intellectual concept of space. In this study I will try to give an outline of Kant’s laborious struggle to find a way out of this trap. For a start, it is important to see what it was that got him there in the first place. Here I will argue that we will have to return to the issue of the form and matter of sensible knowledge. For Kant it was clear, already from the outset, that space is not just a form of sensible knowledge, but itself the matter of knowledge – a peculiar matter indeed, namely the matter of pure knowledge.

From the encouraging letters from Lambert, Kant was familiar with the idea that the representation of space derives from sensation or intuition, in the terminology of Lambert. For Kant, Lambert’s alternative was no option, since it made space a part of the matter of sensible knowledge. On the one hand space becomes a sensible reality, which brings back the problem of the heterogeneity of the body and the mind, mentioned above. On the other hand, and independently of the former argument, it makes the representation of space a singular concept of empirical intuition, a representation very similar to the sense ideas of Locke, a main source of inspiration for Lambert.

In this study, I will argue that Kant’s rejection of Lambert’s option is more intelligible against the background of Locke’s demonstration of the origin of the idea of space. Locke had made an attempt to trace the origin of the idea of space back to the simple sense idea of extension, which we get from touching and seeing extended bodies.⁵⁴ Touching and seeing gives us an idea of extension as a finite whole of movable, impenetrable, discrete, and separable parts. The trouble is that this idea is not identical with the idea of an absolute space, which is the pure idea of an infinite and

⁵⁰ For a discussion of this aspect, see Specht (2014, p. 39). See also Falkenstein (2004, pp. 84-5).

⁵¹ Falkenstein (2004, pp. 79-81).

⁵² Falkenstein (2004, pp. 10-12).

⁵³ Falkenstein (2004, pp. 49-50).

⁵⁴ *An Essay concerning Human Understanding* II, xiii, 2.

continuous whole of immovable, penetrable, and inseparable parts.⁵⁵ Locke was painfully aware that this fact is completely inconsistent with the principle of empiricism.

Kant was most likely aware of Locke's difficulties. Locke wanted to trace all concepts back to experience, but made use of them beyond the limit of experience, as Kant observed in the 1770s.⁵⁶ Probably this contributed to his late 1760s assessment that the concept of space is a pure concept of understanding (*notio intellectus puri*).⁵⁷ This was not Kant's last word on the issue, as will be seen. In any case, it made Kant's position very close to that of Leibniz, for Leibniz had also criticised Locke and suggested that space is an innate idea of understanding.

Taking this historical background into consideration makes it even more difficult to understand why Kant was usually so negative to Leibniz's philosophy of space throughout his career. On the one hand he is famous for accusing Leibniz of having made the representation of space too sensible, by trying to reduce it to an empirical concept of reflection.⁵⁸ On the other hand, Kant is also famous for accusing Leibniz of having intellectualised space and time – Leibniz was not familiar with the sensible component of our knowledge of space and time, as Kant explained in a note from the 1770s.⁵⁹

In this study, I will try to figure out what Leibniz actually thought about the intellectual origins of the idea of space. Though this is a noble task in itself, I will barely scratch the surface of this theme. My modest purpose is just to get a better understanding of Kant's critique of Leibniz, which helps us to understand why he denied that the original representation of space is an empirical concept of reflection.

In order to see why Kant denied that it is possible to form a concept of space by virtue of reflection, it is helpful to consider Leibniz's critique of Locke in closer detail. In this study, I will try to show how Leibniz tried to demonstrate that the idea of extension derives not from sight and touch, but from what is common to them. The idea of extension is therefore an abstract idea of common sense or imagination.⁶⁰ Imagination perceives extension by abstracting from everything diverse, in the bodies – not only their colours and sounds, but also ultimately the entire richness of their actually infinite, ultimately simple parts. What remains is only the ghost-like, uniform, and unbound order of situations – an ideal whole, which only the intellect can grasp in its infinity, by forming the idea of an absolute space.

In an important study, Vincenzo De Risi has shown that Leibniz's idea of absolute space is nothing but the idea of a complete order of situations or places, which he made an object of his *analysis situs* – a precursor of the 19th century geometries, which studied not figures, but the global structure of space.⁶¹ However, Leibniz never succeeded in showing that an order of situations or places is necessarily continuous and hence extended.⁶² Space is extended only as an order of confused outer perceptions or phenomena. From that point of view, one can perhaps say that Leibniz failed to show that space is a pure idea of the intellect.

However, as De Risi shows, Kant was hardly correct about Leibniz being innocently unfamiliar with the more sensuous aspects of space, for Leibniz made space a form of sensibility, a form of

⁵⁵ *An Essay concerning Human Understanding* II, xiii, 11-21.

⁵⁶ *Reflexionen zur Metaphysik*, Nr. 4866, Ak. 18, p. 14. For a detailed discussion of this note, see Guyer (2008, p. 81).

⁵⁷ *Reflexionen zur Metaphysik*, Nr. 3930, Ak. 17, p. 352.

⁵⁸ See Jauernig (2008, pp. 47-8), for an overview of the main components of this interpretation.

⁵⁹ *Reflexionen zur Metaphysik*, Nr. 4851, Ak. 18, p. 9.

⁶⁰ *New Essays*, p. 128.

⁶¹ De Risi (2007); see also De Risi (2015, pp. 1-11).

⁶² De Risi (2007, pp. 415-22).

perception.⁶³ Space figures as a form of the synthesis of situations, without which there are no perceptions and certainly no confused perceptions. It is the very same synthesis of imagination, which also makes space continuous. Hence, the continuity of space is neither an intellectual idea nor a sensible idea, but a transcendental determination of space, taken as a form of perception.

Keeping the transcendental aspects of Leibniz's *analysis situs* in mind is of course helpful to evaluate Kant's critique of Leibniz, but it still does not explain why Kant came to argue that the original representation is a singular, pure intuition and not a concept of reflection. In this study, I will argue that we cannot get the entire answer directly out of the inaugural dissertation, from 1770, but that we have to read it against the background of Kant's notes on Baumgarten's *Metaphysica*. To this aspect of my reading, I turn now.

1.6 Leibniz's *Analysis Situs* and Kant's Science of Space

In this study, I will argue that Kant got much of his unfortunate ideas about Leibniz's philosophy of space from the famous mathematician Leonard Euler (1707-1783), whom Kant probably came across already in the 1750s. Kant's interest for Euler was not the result of a meeting of minds, but more like a rather sober professional interest in Euler, in his capacity as one of the main protagonist in the German 18th century debate between Leibnizian metaphysicians and Newtonian mathematicians. In his habilitation thesis from 1756, "Physical Monadology" (*Monadologia Physica*), Kant had estimated that it was easier to mate a griffin with a horse than marrying metaphysics with geometry.⁶⁴ Whereas metaphysics denied that space was empty and infinitely divisible, geometry wholeheartedly affirmed it, etc.

Euler was of course an excellent example of Kant's thesis. Euler had ridiculed the "metaphysicians" for having described the idea of space as an idea of place in general, by abstracting from every determination, which belongs to a material body.⁶⁵ However, this does not give us an idea of the real space of the physical space of the universe, which is absolute and not relational and which all material bodies have to be related to in order to have a situation with respect to other material bodies.⁶⁶

Though Kant only knew fragments of Leibniz's *analysis situs*, he had raised some critical remarks against it, in the paper "Concerning the Ultimate Ground of the Differentiation of Directions in Space" (*Von dem Ersten Grunde des Unterschiedes der Gegenden im Raume*) from 1768. In this study, I will argue that Euler might have influenced Kant's critique. The original representation of space is not an empirical concept of reflection, no more than it is an empirical intuition, for it is not the concept of place in general.

The problem with Leibniz's *analysis situs*, as Kant saw it, was that the author had failed to understand that space is more than an order of situations, namely an order of *oriented* situations.⁶⁷ Situations cannot be reduced to the situations of dead mathematical points, but are more like the situations of bodily points of view. Thus, situations are not just ordered with respect to other situations, but carry an orientation, a left, a right, etc. These orientations refer beyond the mere

⁶³ De Risi (2007, pp. 415-22).

⁶⁴ *Physical Monadology*, p. 51, Ak. 1, p. 475.

⁶⁵ Euler, *Reflexions sur l'espace et le temps*, §§ 14-15, pp. 329-30.

⁶⁶ *Reflexions sur l'espace et le temps*, §§ 11-15, pp. 328-30.

⁶⁷ *Concerning the Ultimate Ground of the Directions in Space*, pp. 365-6, Ak. 2, pp. 365-6.

order of situations, towards an absolute space, from which the situations originate. Space is the absolute inner unity of all possible directions.

In this study, I will argue that Kant's 1760s study of the form of sensibility led him to the sources of the science of space. This science is a science of a form of our knowledge, which can be revealed only by completely abstracting from the content or matter of our knowledge. The same method made it possible for Kant to reflect on the forms of knowledge, not from the logical point of view of what they have in common, but purely from the transcendental point of view of their origin, in either sensibility or understanding. On the one hand it led Kant to space and time, as the original forms of sensibility, but on the other hand it also led him to the principle of contradiction, the principle of sufficient reason, and ultimately the logical forms of judgment, as the forms of the understanding.

The forms of understanding were important, because they pointed towards the pure concepts of understanding, met with in metaphysics, like the concept of possibility, substance, causality, etc. However, it was the forms of sensibility, which suggested the most promising results, namely a completely new philosophical science of space and time. Kant only presented glimpses of his new science in the inaugural dissertation from 1770 but taken together with those late 1760s remarks on space he had jotted down in his notes on Baumgarten's *Metaphysica*, a more complete picture arises.

On the one hand this new science was not metaphysics, for metaphysics is at its core ontology and hence a science of the most general predicates which belong to the possible existence of a thing. True, many of these predicates – pure concepts of understanding like the concept of the whole, the many, one, etc. – will migrate from ontology to the science of space. However, their use is entirely different, for they do not serve the purpose of knowing the most general predicates of a thing, but the most general predicates of space, which is an ideal structure. On the other hand, it was not Euclidean geometry, for this rather outworn science “only” dealt with the general predicates of constructed geometric spaces, lines, circles, angles, etc.

In this study, I will argue that some of Kant's results are surprisingly close to those of Leibniz's *analysis situs*. For both Kant and Leibniz, space is absolute, in the sense that it is all-encompassing and therefore also infinite. Kant's new science of space is not a Leibnizian geometry of space however. The space Kant had envisioned and measured out for his new science is out of reach for our understanding if it has to rely solely on its own idea of space as an all-encompassing and infinite order.

In his private notes from the 1760s Kant revealed that the science he had in mind was not the work of our understanding alone, for the concept of space is not a pure concept of understanding like the concept of an order of situations. Space is a specifically *continuous* order, an order which understanding has neither inclinations nor resources to deal with on its own. Like the orders studied by the *analysis situs*, this order is a global order. However, the whole it forms is a continuous whole, a *totum analyticum*, which is given prior to its indeterminate parts. It is a space which is global in a much more radical sense namely because it tolerates no other spaces, no competitors, not even any friendly neighbours.

Our intellect may very well think of other global orders, with different fancy spherical or hyperbolical geometries, but in the end they are just figments of mind, locked up in our heads, like the *phantasmata* Hobbes once described.⁶⁸ Moreover, the sole and unique space, which is the topic of Kant's science of space, dominates not only the space structures that we may think about, but

⁶⁸ *De Corpore*, vii, 3, p. 58.

also the Euclidean spaces we actually may construct and bring to life outside our heads, with a ruler or a compass. The same holds for the spaces of the far distant stars, the solar systems, and the galaxies, which are born only to become tiny parts of this truly gigantic, immeasurable space. Even the spaces of other universes are destined to bow their heads and become humble provinces in the kingdom of the one and only space.

The possibility of having first-hand knowledge of space, as a unique and continuous whole, left Kant with no other option but to conclude that the original representation of space is a pure intuition and hence neither an empirical nor a pure concept of reflection. This knowledge also shows that space must be transcendently ideal. For on the assumption that space is transcendently real, as an order of situations or places of simple substances, we would not have a pure intuition of space. Instead, our knowledge of space would flow from an innate idea of space as an order of situations, or from the empirical concept of situation in general, which could never give us knowledge of space as a continuous whole.

There is no necessity given in the sensation at all, which means that space cannot be the source of any necessary truths, unless it is given to us a priori. The transcendental ideality of space is hence inseparable from the very possibility of truths in Euclidean geometry. In this way, Kant found another arrow in his quiver of arguments, for the transcendental ideality claim. In the end, this argument turned out to be more important than the argument from the conditions of the mind-body union, described above.

In summary, Kant's 1760s notes certainly suggest that he had discovered a way to show how it is possible for the understanding to have pure knowledge of space as it originally is given to sensibility. However, the notes do not give us any detail, which suggests that Kant's way was real and open to anyone interested in a global investigation of space, not far distant from Leibniz's geometry of space. In order to zoom in on this question somewhat closer, we have to take a brief look into the inaugural dissertation from 1770.

1.7 Rereading the Inaugural Dissertation

Many commentators agree that Kant's inaugural dissertation, from 1770, has a distinctive position in the transition from the pre-critical to the critical period. The "Inaugural Dissertation" (*De mundi sensibilis atque intelligibilis forma et principiis*) from 1770 has however caused much embarrassment among Kant's commentators. In the inaugural dissertation Kant not only confirmed that space is the epistemic ground or condition under which sensibility can represent the phenomenal world, but also that it is transcendently ideal, because it is different from the cause or real ground of the noumenal world, namely God.

For those scholars who defend the view that Kant abandoned metaphysics during the 1760s, it seems perplexing to see that Kant actually made room for things, which properly belong to dogmatic, Leibnizian metaphysics; as Beiser observes the inaugural dissertation seems to contain a revival of those ugly and musty rationalist ideas, which Kant allegedly had exposed and scorned in the 1760s.⁶⁹ Moreover, given that the 1770s marks the threshold between the critical and pre-critical period, how are we to understand that Kant made concessions to ideas which seem inconsistent not only with scepticism, but with transcendental, critical philosophy as well?

⁶⁹ Beiser (1999, pp. 47-8).

The Kant scholars have responded in different ways, by either trying to deemphasise or deny the rationalistic elements in the inaugural dissertation, or by accepting them but expedient of having to relegate the inaugural dissertation to the pre-critical period.⁷⁰ The view that the inaugural dissertation belongs to the critical period has a long and prominent line of defenders, with names like Kuno Fischer, Benno Erdmann, Erich Adickes, Friedrich Paulsen, and Désiré Nolen.⁷¹ Typical of these scholars is that they put much emphasis on those passages where Kant discusses the transcendental ideality of space and time, which they take to be the decisive aspect of Kant's critical turn. Other scholars, like Wilhelm Windelband and Vaihinger have down played the importance of these parts of the inaugural dissertation.⁷² More recently, Schönfeld has made a similar interpretation, by describing the inaugural dissertation as the "last major pre-critical work", albeit one that served as a "starting point" for Kant's critical philosophy.⁷³

The trouble for the first group of scholars is that they have to put the dogmatic metaphysical elements of the inaugural dissertation within brackets, particularly when they compare the inaugural dissertation with some of the works written during the critical period, most notably the *Critique of Pure Reason*. The second group on the other hand has to explain why Kant suddenly fell back into his "dogmatic slumber", and why this sudden drowsiness occurred 1770, just shortly after the year of the great light, 1769. In addition to these dilemmas, there is the problem of explaining why Hume's influence suddenly made itself felt in the inaugural dissertation (Fischer), and how Hume could have later inspired Kant to abandon the beliefs he expressed in the inaugural dissertation, given the strong impression that the reading of Leibniz's *New Essays* (*Nouveaux Essais*) had made upon him (Vaihinger).

The key needed in order to avoid these dilemmas is, I will argue, to consider the critical turn and in particular the transcendental ideality claim, not as a complete rupture with the early, dogmatic metaphysics of causally interacting monads but as a way of avoiding the unwarranted, materialistic implications of this metaphysics. In short, there is no conflict between the inaugural dissertation and the anti-metaphysical tendencies of the 1760s. Not because the inaugural dissertation is metaphysical exclusively in a sort of sophisticated and ironic way as Beiser argues – but because the 1760s never made Kant into a complete sceptic about the possibility of metaphysics in the first place.

In this study, I will make a modest attempt to re-read Kant's inaugural dissertation, bearing these premises in mind, with the purpose of throwing more light on the vague contours of Kant new science of space, outlined in the 1760s notes. To this end I will pass over those passages in the inaugural dissertation which deal with ontology, not only because they are too vague and undeveloped to be of any importance for this study, but also because I want to keep Kant's ontology apart from his science of space, which belongs to the presuppositions of ontology.

Kant's remarks on cosmology are more promising in this respect. Here Kant suggests that the understanding is in possession of a concept of an absolute whole, a whole which is not a part of another whole, and which understanding applies to the world, by thinking its ultimately simple parts

⁷⁰ For a brief summary of the 19th century debate on the nature of the inaugural dissertation, see Hermann Gattermann (1899, pp. 3-5).

⁷¹ Erdmann (1884, p. xlv), Paulsen (1875, p. 102), Nolen (1875, p. 156); the views of Fischer and Adickes are presented in Gattermann (1899, p. 3).

⁷² Vaihinger (1881, p. 48). According to Vaihinger the inaugural dissertation was the immediate result of Kant's reading of Leibniz's *New Essays*, making it necessary to describe the inaugural dissertation as pre-critical, or more specifically, even dogmatic. Windelband's position is presented in Gattermann (1899, p. 4).

⁷³ Schönfeld (2000, p. 14).

under the concept of a composite substance.⁷⁴ Though it is in the power of our understanding to grasp the absolute – a remarkable achievement – all its powers evaporate when it tries to exercise them on the world as a phenomenon. For when the understanding tries to conceive the world as it is in relation to sensibility, it has to operate on foreign territory in accordance with the laws of sensibility. This means that it can represent a whole, only by adding parts, which are *given* to it by the sensibility, a process that goes on indefinitely without ever resulting in anything but relative wholes, wholes that are parts of other wholes.⁷⁵

In the face of this humiliating experience, understanding can insist on its entitlements to the absoluteness of the world, claiming that the sensibility distorts the actually finite world, by making it immeasurable for us. Alternatively, understanding can give up its entitlements to the absoluteness of the world, in exchange for the right of thinking that it is actually an infinite multitude. However, in both cases sensibility jealously preserves its secrets, making understanding degrade into a clueless speculative reason, which throws itself from one opposite to the other, in a perpetual and insolvable dialectical antinomy.

It is here that the results of Kant's newly found science of space stretches out a helping hand, because it reconciles understanding with the fact that the phenomenon of the world has constituted itself as a whole in its own right, a whole grounded by space and time, and which bears the topological and mereological properties of space as its birth-marks. Thus, the newly born phenomenal world will constitute itself in the image of space as an infinite continuous whole, which is prior to its indeterminate parts. Though the phenomenal world corresponds to and refers to the noumenal world of simple substances, on which it depends, it will be a whole in its own right.

I will argue that Kant's fundamental message in the *Inaugural Dissertation* is that understanding must critically learn to check its inborn attraction to ontology, its tendency to think of everything in terms of things. Though this tendency is both legitimate and useful in order to adumbrate the conditions under which it is possible to know and act on objects, which are substantially real and measurable, it is detrimental to the knowledge of ideal structures such as the space and time of the phenomenal world. It makes us conceive space either as a mere figment of imagination, or as a substance, or as an accident, but it makes us blind to the ideality of space – an ideality which nonetheless is perfectly objective, and which dominates everything we experience.

It is exactly this forgetfulness, which explains why understanding misconceives the phenomenal world as a synthetic whole, which is posterior to its simple parts. More generally, it is the source of the antinomies and the spurious Leibnizian ideas of spatially situated monads and souls, as well as the Newtonian idea that God's omnipresence to the noumenal world is local, rather than virtual. As a result, space is misplaced, from the phenomenal world to the noumenal world, where it transforms itself into an order between discrete simple substances, or slips between God and his intimate presence to the world.

In this study I will argue that these considerations are decisive, in order to understand Kant's arguments in the inaugural dissertation, against both the Newtonian idea of absolute space and the Leibnizian idea of space as an order between coexisting simple substances or monads. In particular, I will argue that Kant's arguments against the Leibnizian idea can be viewed more easily if we consider it against the background of the science of space he outlined in the late 1760s. In Kant's interpretation, the Leibnizian idea of space strips space of its continuity and the necessity, which

⁷⁴ *Inaugural Dissertation* §1, p. 377, Ak. 2, p. 387.

⁷⁵ *Inaugural Dissertation* §1, pp. 377-8, Ak. 2, pp. 377-8.

belongs to it as a transcendental condition of outer phenomena. As an outcome, it becomes impossible for Leibniz to explain the necessity of the postulates of Euclidean geometry, which are reduced to mere inductive generalisations.

I will argue that none of these arguments really threaten Leibniz's philosophy of space, when we consider them against the background of De Risi's studies of Leibniz's *analysis situs*. In short, they overlook that space is not an order of coexistence, according to Leibniz, but an order of situations, which serves as a form that conditions the way that situations are synthesised in sensibility. Euclidean geometry is embedded in the very formation of an outer perception by the imagination, according to Leibniz. We may think what we want about the validity of Leibniz's philosophy of space, but Kant's particular strategy of attacking it does not work.

With this said, a rereading of Kant's inaugural dissertation, along the lines I suggest, leaves no answer to the question of the origin of the pure intuition of space and how a purely discursive understanding can form a concept of a singular space. On the bottom floor we have a truly mind-boggling pure intuition of space, so powerful and yet so mysteriously unwilling to tell us anything about its origin. On the upper floor we have an abstractive intellect, which only feels at home with those abstract, reflective concepts it has been able to extract from itself or from the contents which the sense intuition has provided it with.

In the *Inaugural Dissertation* Kant does not dispel any of the mysteries of the machinery working behind our pure knowledge of space. In some sense, the inaugural dissertation just adds to the mysteries, for in the inaugural dissertation Kant tells his reader that space is the phenomenon of God's all-presence.⁷⁶ The pure intuition of space is perhaps not a rational intuition or direct mystic experience of God, but it certainly looks as an indirect mystic experience, one caused by God, as he makes us perceive his omnipresence as a phenomenon in its own right.⁷⁷ We experience everything in God, not directly, but certainly indirectly.

Though this interpretation is tempting, and though I think that it comes close to what Kant believed, it played no practical role in his later, official explanations of the pure intuition, which understanding later makes itself familiar with in the science of space. Instead, it was going to be based on conclusions from the possibility of having pure, a priori knowledge of space, which would be impossible if space is a real structure of the world, rather than an ideal structure. In a rather famous letter to Lambert, from 1770, Kant suggested a plan for his new science. It would be a merely "negative science", a *phenomenology*, which would determine the "validity" and "limitations" of the principles of sensibility, with the purpose of dissolving all spurious concepts of metaphysics.⁷⁸ Later, in the *Critique of Pure Reason*, Kant would rebaptize his new science and present it under a new name: "Transcendental Aesthetic". To my interpretation of Kant's Transcendental Aesthetic, I turn now.

1.8 Towards a Reading of the Transcendental Aesthetic as a Phenomenology

The *Critique of Pure Reason*, from 1781, is commonly described as the final landmark in Kant's transition to transcendental idealism and hence transcendental philosophy. Kant outlines his new transcendental philosophy in the following way:

⁷⁶ *Inaugural Dissertation*, §22, Scholium, p. 405, Ak. 2, p. 410.

⁷⁷ For a discussion of the distinction between direct and indirect mystical experience in Kant's philosophy, see Maharaj (2017).

⁷⁸ *Correspondence*, p. 96, Ak. 10, p. 98.

The philosophy of pure reason is either a *propaedeutic* (preparation), which investigates the faculty of reason in respect of all its pure *a priori* knowledge, and is entitled *criticism*, or secondly, it is the system of pure reason, that is, the science which exhibits in systematic connection the whole body (true as well as illusory) of philosophical knowledge arising out of pure reason, and which is entitled *metaphysics*. (A841/B869)

Philosophy of pure reason is transcendental philosophy, which is either critique or metaphysics. First, it is critique, insofar as it investigates the *origin, extent, and boundaries* of the pure knowledge which we have from the faculty of reason.⁷⁹ Secondly, it is metaphysics insofar as it exhibits the pure knowledge arising out of the faculty of reason.

In condensed form, transcendental philosophy must concentrate on the concepts and principles of all pure knowledge, and how this knowledge is possible. There is little doubt that the Transcendental Aesthetic can be seen largely as an attempt to put this plan into practice, with respect to the kind of pure knowledge which we have of space and time. We should therefore expect that the Transcendental Aesthetic contains an investigation of the origin, validity, and limits of our pure knowledge of space. Such knowledge originates from space as a pure form of sensibility, namely an order or form of outer appearances.

The trick in order to isolate space as a form of pure sensible knowledge is first to isolate the empirical intuition of sensibility from the pure concepts of the understanding, and then separate off this empirical intuition from everything that belongs to outer sensation. This leaves us with nothing but a pure intuition of space and the spatial order of outer appearances:

In the transcendental aesthetic we shall, therefore, first isolate sensibility, by taking away from it everything which the understanding thinks through its concepts, so that nothing may be left save empirical intuition. Secondly, we shall also separate off from it everything which belongs to sensation, so that nothing may remain save pure intuition and the mere form of appearances, which is all that sensibility can supply *a priori*. (A22/B36)

The problem is that understanding cannot have any knowledge of the original phenomenon of space, which shows itself in this pure intuition, unless it conceptualises it. Intuitions without concepts are blind, as Falkenstein repeatedly observes.⁸⁰ In order to conceptualise the pure intuition of space, understanding cannot rely on the active part of the sensibility, the imagination. Imagination only knows how to determine the manifold of the pure intuition under the concept of a Euclidean space, not the concept of the original metaphysical space, in which the understanding is interested. Here imagination seems to have exhausted the utmost limits of its capacity, a failure that seems to illustrate the fundamental incorrectness of Kant's method of isolation, which is exactly what Falkenstein concludes.⁸¹

Falkenstein therefore suggests that the proper method Kant actually followed was a method of conceptual exposition, not the method of isolation.⁸² Pure knowledge follows from an analysis or exposition of the metaphysical concept of the original space, as a singular, all-encompassing,

⁷⁹ A2-6/B6-10, c.f. *Metaphysik Mrongovius*, Ak. 29, pp. 750-2, 779-81, 786-7.

⁸⁰ Falkenstein (2004, pp. 54-58).

⁸¹ Falkenstein (2004, pp. 148-51).

⁸² Falkenstein (2004, p. 149).

infinite, continuous magnitude which is the ground of all outer intuitions. From these marks, we can trace the concept of the original space back to its a priori origin in a pure form of sense intuition. It confirms that the concept of the original space is the concept of an a priori order, which is the outcome of an act of abstraction from everything given in the sensations.⁸³ It is in this sense that space is a priori because it is an order, innate to sensibility (“the receptor system”).⁸⁴ Though we might say that space is an intuition (or the object of an intuition), it is more correct to say that space is “originally presented in intuition”, namely as an order of an intuited manifold.⁸⁵

Falkenstein’s version of the method of conceptual exposition has problems of its own however. Most importantly, the method does not itself explain the origin of the concept of the original space, which is the object of the exposition. Here Falkenstein suggests that it results from an “intellectual abstraction” of the order “in which the matters of intuition are originally presented”.⁸⁶ Basically, this is nothing but the method of isolation or abstraction, but with the important difference that it does *not* remove *everything*, which the understanding thinks through its concepts, such as when it thinks the representation of a body.⁸⁷ Removed are only those determinations, which originate from the matters of intuition, like the impenetrability of the body, and those determinations, which originate from the “synthesis of just the *pure form* of the intuited manifold”,⁸⁸ presumably the transcendental schemata, like the transcendental schema of the category of substance,⁸⁹ which is the permanence that belongs to the impenetrability of the body.

The trouble is that Falkenstein’s version of the method of isolation leaves us with a concept of space, which is strikingly similar to the Leibnizian concept of space, as an order of situations, which Kant considered as a concept of reflection. However, on my reading, the primary purpose of the method of abstraction is not to isolate the concept of space and reduce it to an order. Rather it is to isolate what *belongs* to the pure intuition of space, which is exactly what Kant explains in a couple of paragraphs before the isolation passage quoted above, where he illustrates the method, by applying it to the example of the empirical intuition of a body.⁹⁰ Taking the empirical intuition of a body in abstraction from the sensation of its impenetrability and colour, the thought of its substantiality, divisibility and force leaves us with nothing but extension and figure.⁹¹ Extension and figure thus belong to the intuition, purely as a form, apart from the contributions of the outer sense and the understanding.

Knowledge of figure belongs of course to Euclidean geometry, so this leaves us with knowledge of extension as the only pure sensible knowledge, which properly belongs to metaphysics, or phenomenology to be exact. Extension, as a determination of pure intuition, is the key to knowledge of the pure space, sought for by Leibniz and Locke.

Unlike an abstract order of situations (Leibniz), the extension that belongs to pure intuition is continuous already from the outset and unlike the extension of bodies (Locke) it is prior to its indeterminate, inseparable, immovable and penetrable parts. The concept of space is hence found by abstraction, not from the body conceived as a thing in itself, which was the source of Euler’s mistake. It depends instead on abstractions from the body, conceived as an appearance or

⁸³ Falkenstein (2004, pp. 150, 153).

⁸⁴ Falkenstein (2004, p. 11).

⁸⁵ Falkenstein (2004, p. 153).

⁸⁶ Falkenstein (2004, p. 150).

⁸⁷ Falkenstein (2004, pp. 150-1).

⁸⁸ Falkenstein (2004, p. 150).

⁸⁹ A143/B183.

⁹⁰ A20-1/B34-5.

⁹¹ A20-1/B34-5.

representation, which means that we must conceive the body from a transcendental point of view. Only an analysis, undertaken from a critical point of view, can lead us away from arbitrary abstractions, to concepts, which belong to the science of space.

Knowledge of the pure, immediate or metaphysical space, takes the form of an analysis of the extension, which belongs to the pure intuition of the metaphysical space. It is immediately an exposition of the metaphysical concept of space – which Kant refers to as a “metaphysical exposition” because it is the exposition of an a priori given concept.⁹² The exposition of the metaphysical concept of space is therefore different from the kind of mathematical expositions (constructions) which occur in Euclidean geometry, which are formal intuitions. Whereas metaphysical expositions produce descriptions of the original metaphysical space, mathematical expositions produce geometric spaces.

From the exposition of the metaphysical concept of space, Kant concludes that space does not represent any determination of things in themselves, in other words, that it is transcendently ideal, for in that case we would not have a pure, a priori intuition of space. Leibnizian critics of Kant, like Johan August Eberhard (1739-1809) and Hermann Andreas Pistorius (1730-1798), objected that Kant’s proof of the transcendental ideality of space was flawed. Kant failed to see that human intuitions are empirical and not a priori and pure; only concepts can be a priori. This thread was then later taken up by Friedrich Adolf Trendelenburg (1802-1872), who came to argue that there is a “lacuna” (*Lücke*) in the proof Kant presents in the Transcendental Aesthetic. On Trendelenburg’s interpretation Kant’s proof failed to exclude the “third alternative” that space might be *both* an a priori intuition *and* a transcendently real property of things in *themselves*.⁹³

In this study, I will argue that Kant did not overlook the third alternative, or at least not the Leibnizian versions of it. The main mistake of the Leibnizians, according to Kant, was that they tried to derive the phenomenon of space from the order of coexistence of simple substances, for it entails that space consists of simple substances. The latter is impossible, for although space is indivisible, it is still infinitely divisible and continuous in the sense that it contains no simple and invisible parts. Implicitly the Leibnizian alternative entails that monads are spatially localised physical monads.

Though it was easy for Leibnizians, like Eberhard, to point out that this conclusion is false, they had a hard time to refute the entire transcendental ideality claim. Given the presumption that continuity is a structural property of wholes (indivisibility, connectedness, etc.), rather than orders, it becomes impossible to derive it from the concept of an order of coexistence. Making space an order of coordinated, confused perceptions, suggested in response to Kant, just goes to show that it is a form of sensibility.

Returning to the Transcendental Aesthetic we can say that it is a critique, not just because it isolates space as an element of the pure sensible knowledge but because it tries to determine how far this pure knowledge extends, namely to all outer appearances. To be exact, it extends only to the outer appearances, and not to things in themselves, like the simple substances, which figure in speculative metaphysics. The transcendental ideality of space therefore also limits the horizon of the pure knowledge, which can be derived from space. Kant’s new science of space, which he

⁹² A23/B38.

⁹³ Trendelenburg was in his turn attacked by Kuno Fischer who argued that there is no lacuna in Kant’s demonstration; for a review of the debate among Fischer’s contemporaries see Grapengieser (1870) and Vaihinger (1892, pp. 290-326).

discovered in the late 1760s, and presented in his letter to Lambert, is in this sense a forerunner of the Transcendental Aesthetic.

From this it seems to follow that the Transcendental Aesthetic leaves no room for speculative, transcendent metaphysics about the noumenal world, the thinking soul and God, which is what the majority of the Kant scholars discussed above have concluded.⁹⁴ However, a number of scholars, among them Friedrich Paulsen, Peter Plaass, Léo Freuler, Karl Ameriks and Olli Koistinen, have been less willing to accept these conclusions.⁹⁵ We can neither prove nor disprove the existence of noumena, like the noumenal world, the thinking soul-substance or God, but what we know is that they *cannot* exist qua phenomena, as Freuler correctly observes.⁹⁶ From this point of view, all judgments, which affirm or negate the existence of the noumenal objects, are mere *hypotheses*, or *problematic judgments*.⁹⁷

On Freuler's interpretation knowledge of noumena is *problematic*, insofar as it exhibits analytical predicates already contained in the concept of the noumenon.⁹⁸ Knowledge of noumena, insofar as it is not problematic, is restricted to predicates which are *analogous* to predicates that otherwise apply exclusively to phenomena.⁹⁹ For instance, because space is related to the outer phenomenal substances, in a way which is analogous to how God is related to the noumenal substances, we are entitled to infer that God must be omnipresent to the noumenal substances, in a way which is analogous to how space is omnipresent to the phenomenal substances. We see all things in space and not in God but in seeing all things in space, we see them in a way which is analogous to seeing them in God.

Ignoring this distinction make us apply spatial and temporal predicates beyond the limits of their use, which leads to the illusory metaphysics Kant refers to in A841/B869, above. To this illusory metaphysics belong a number of spurious concepts, such as the concept of God's omnipresence as spatial rather than virtual, the concept of extended noumenal substrates, the concept of spatially localised monads, and ultimately also the concept of the noumenal world as extended in space, which is the source of the mathematical antinomies. In this study I will argue that these spurious metaphysical concepts depend on a so-called *transcendental amphiboly*, i.e. a conflation of phenomena and noumena.¹⁰⁰ Dissolving the transcendental amphibolies and purifying speculative metaphysics from its illusions, depends on the recognition of the transcendental ideality of space, which provides another, indirect, argument for the transcendental ideality claim.

1.9 Disposition

The disposition of the study is as follows. The *second chapter* deals with the earliest stage of Kant's thinking, i.e. the period 1747-1756, and his attempts to explain how seemingly indefinitely divisible bodies in space can originate from indivisible and partless substances. One important key to understanding this problem, and Kant's solution to it, is to consider it against the background of

⁹⁴ Kemp Smith (1999, p. 434), Erdmann (1884, p. lvii-lviii). Paulsen (1875 p. 147). Here it must not be concluded that Paulsen thought that the critical Kant rejected all metaphysics; on the contrary Paulsen claimed that the critical Kant only turned his critical weapons against the old speculative school metaphysics (*Schulmetaphysik*), not against metaphysics as such. See Paulsen (1900, p. 413).

⁹⁵ Paulsen (1900); Plaass (1994); Freuler (1992); Ameriks (1999); Koistinen (2012).

⁹⁶ Freuler (1992, p. 254).

⁹⁷ A781/B809.

⁹⁸ Freuler (1992, p. 354).

⁹⁹ Freuler (1992, pp. 340-5); cf. *Prolegomena*, § 58, Ak. 4, pp. 357-8.

¹⁰⁰ A270/B326.

Leibniz's ontology of monads. Leibniz had suggested that monads are simple, unextended substances. Yet they are the basic building blocks of material bodies and other extended phenomena in space.

I will therefore start the second chapter with a discussion of how Leibniz figured it possible to bring non-spatial monads in touch with space. The most important lesson here is that monads have no situation or place in themselves. However, like souls, they perceive the world from the point of view of an organic body which they control and which they confusedly perceive as extended and situated in an indistinguishable, continuous manifold of *extensa*, which are the organic bodies of other monads. The situatedness of the monads does not belong to the monads in themselves, but to their mode of coexisting with other monads on the ideal level of their bodily, phenomenal expressions. This explains how an infinitely divisible extended material body can arise from something as unexpected as an aggregate of an infinity of indivisible monads.

Leibniz's contemporaries were not convinced, however, and suspected that his explanation was no better than a conjuring trick to make extended bodies disappear. In chapter two, I will try to show how this criticism led to a thoroughgoing revision and estrangement from Leibniz's original metaphysics of monads. Wolff's replacement of monads by atom-like, physical unities as the elementary parts of physical bodies was one important landmark of this revisionary movement. It was followed by Knutzen's suggestion that bodies consist of monads, but monads that are endowed with primitive passive and active forces of motion, which make the monads capable of filling space and moving each other.

In chapter two, I will argue that Knutzen's monads cannot act outwardly, in accordance with the theory of physical influx, unless they have a place and hence a mode of coexisting with other monads. However, because of their ontological independency, monads do not coexist with others unless they already are connected and act outside themselves, which seems to make Knutzen's defence of the theory of physical influx circular.

In chapter two, I will also argue that much of the young Kant's endeavours were designed to correct this flaw in Knutzen's argument. Simple substances exist in space because they act outwardly on one another by essential active forces which do not rely on the premise that the substances already move and are moved by these forces. The only premise needed is that the simple substances coexist, something the young Kant took to be granted by the act whereby God perpetually creates and recreates them. To exist is for us to coexist in the same world, and coexistence compels us to interact in an orderly fashion. In the course of Kant's intellectual development during the dogmatic period, the simple substances finally evolve into physical monads, endowed with repulsive and attractive forces, by virtue of which they fill the places they occupy. Physical monads, not perceiving monads, are the building blocks of the material bodies.

The *third chapter* is focused on Kant's development between the years 1760-1769. The basic background of this chapter is Kant's growing insights into the materialist implications of his physical monadology. How is it possible to avoid the conclusion that the soul is a physical monad, which is present to its body because it occupies a place in it? In the third chapter, I will argue that Kant's solution to this problem was based on the hypothesis that the soul can be present to its body, without touching it. The soul is virtually, not locally, present to its body, i.e. it is present to its body, because it acts upon it. Thus, the soul has no other place than the place of its body, which is its point of view. Kant's solution to the dilemma he had detected thus involved not only a reconsideration of the soul's presence to its body, but also a different way of conceiving the bodily monads and their states and powers.

In the 1760s Kant's physical monads started to look more like Leibniz's monads, in the sense that they had to have a power to perceive (feel) and not just move. However, Kant denied that the bodily elements could become aware of their own perceptions, no more than the perceptions of the human soul, which means that they have no power to act upon the soul. The body is disassociated from the soul, for it cannot act upon something which does not occupy a space. In chapter three, I will argue that the dissociation of the body from the soul explains why Kant puts so much effort on his investigation of the human sensibility in the end of the 1760s. Thus, the study of sensibility seemed to provide the key to the problem of how it was possible for the body to act upon the human soul.

In chapter three, I will argue that Kant's investigation of sensibility was inspired by his reading of Leibniz's commentaries on Locke, and his correspondence with Lambert. Locke's and Lambert's influence is visible in Kant's view that sensibility provides the soul with the matter of all knowledge. However, knowledge involves also form, as both Lambert and Leibniz pointed out. Kant's main suggestion here is that knowledge has a sensible form, which is different from the logical form. The sensible form of knowledge originates from the form of our sensibility, which Kant now identifies with space and time. More precisely space is the form of our outer sensibility, which lets the body appear as the point of view, from which sensations can be oriented in the determinate direction of an outer object. In itself, the body is no more situated in space than a monad, which means that it is possible for it to act on the human soul, without having to assume that it occupies a place in space.

In the *fourth chapter*, I will describe how Kant's study of sensibility, at the time of the critical turn 1769, compelled him to reconsider the origin and nature of the concept of absolute space. Given that space is a sensible form of knowledge it immediately follows that it is necessary to reconceive the origin of the concept of space. Outer sensations of sight or touch give us an idea of bodily extension. However, none of this explains the origin of our idea of absolute space, which is non-solid, continuous, immovable, and infinite, as Locke had observed. To Leibniz this suggested that we have to search for the origin of the idea of space somewhere else. The idea of space originates, not from touch or sight, but rather from the common sense or imagination, which perceives what is common to them, namely extension. Extension, taken apart from the extended, leaves imagination with the idea of a uniform order of situations, without boundaries, which only the intellect can grasp in its infinity, by forming the idea of an absolute space.

In chapter four, I will argue that Kant unfortunately apprehended much of Leibniz and his *analysis situs* through the prism of Euler's writings. This led Kant to the erroneous belief that the idea of space is the result of reflection, according to Leibniz. Like the concepts of species and genera, the idea of space is an empirical concept of reflection, originally abstracted from bodies. Reflection reduces space to place, for place is the only thing bodies have in common when they are taken in isolation from all determinations which belong to their nature as bodies. This ignores that space gives an orientation, and not just a place, to our sensations. In short, reflection cannot explain the idea of space as a subjective, but yet absolute ground of all dimensions and directions, typical of the pure form of outer sensibility, Kant had identified in the late 1760s.

In chapter four, I will also argue that it is possible to extract a somewhat stronger argument against Leibniz. Leibniz's difficulty is not so much that he cannot explain the directedness of an order of situations, but that he cannot explain what makes it continuous, rather than discrete. However, if this is true it becomes difficult for Leibniz to explain the possibility of the pure idea of an extended space, at least not without admitting that space is more than an order of situations, namely a form of sensibility. Space is extended, only if it is a continuous quantity, and therefore a

whole, which is prior to its indeterminate parts. From this observation, Kant concluded that spaces are possible only as parts of the all-encompassing subjective space, which led him to the conclusion that space is unique. The original representation of it is not reflective, but intuitive, namely a pure concept of intuition, as Kant expressed it.

In the *fifth chapter*, I will discuss how the division between sensibility and understanding guided Kant in his attempts to come to terms with the twofold origin of the representation of the world, which he presented in the inaugural dissertation from 1770. The purpose of this chapter is to show how Kant's new concept of space led him to make a distinction between the world as an absolute whole of simple substances, and the phenomenon of the world, i.e. the appearance of the world in relation to sensibility. The phenomenon of the world shares some of the fundamental mereological properties of the world, for instance that it is an absolute whole. On the other hand, the phenomenon of the world also shares some of the topological and mereological properties of space, namely that it is continuous prior to its indefinite parts, etc.

On the basis of this discussion, I try to follow Kant's first attempt to demonstrate that the original representation of space is a pure intuition. The postulates of Euclidean geometry cannot be derived merely from concepts, such as the concept of an order of situations. Thus, there is nothing in the concept of an order of situations, which prescribes that it is Euclidean. The truths of the postulates of Euclidean geometry are derived from the constructions of lines, angles, circles, etc., which are apprehended in an all-encompassing, continuous space, which is a priori and singular.

From these observations, Kant concludes that space cannot be conceived in the same way as a determination of a thing. For if it is conceived as an order of situations of coexisting noumenal substances (monads) as the Leibnizians argue, it follows that the original representation of space is an empirical concept. This makes it impossible to explain the possibility of Euclidean geometry as a science. The postulates of Euclidean geometry, such as the first postulate, lose their necessity, and regress into mere inductive generalisations.

In chapter five, I will argue that Kant's argument does not work against Leibniz. The postulates of Euclidean geometry are not inductive generalisations according to Leibniz, but principles of synthesis, in accordance with which imagination produces the extension of phenomena and the space of the phenomenal world. However, Kant's arguments are still valuable, because they underline that his version of the transcendental ideality of space is much more radical than that of Leibniz. For Kant the phenomena are not just confused expressions of things, which at the bottom are actually finite or infinite manifolds of discrete simple substances. Their potential, infinite divisibility inalienably belongs to their very being as phenomena. The consequence of this is that there is never any exact one-to-one correspondence between phenomena and noumena. For Kant space is transcendently ideal, not only because noumena are not in space, but also because the spatial order between phenomena is not isomorphic with the order of coexistence between the noumena.

The *sixth chapter* enters the 1780s and Kant's Transcendental Aesthetic, against the background of Kant's plan for a general phenomenology. The Transcendental Aesthetic was not executed exactly in accordance with Kant's plan but shares many commonalities with it. The key issue for such a reading is to address Kant's method of abstraction or isolation. Contrary to what many scholars claim, the method of abstraction is not an unfortunate misstep on Kant's part, but an essential element of his expositions of the metaphysical concept of space. Only by taking the empirical intuitions abstractly does it become possible to uncover extension, purely as a determination of the form of outer sensibility.

The expositions of the metaphysical concept of space is an analysis of this extension. It shows that space is a continuous and infinite whole which belongs to the original phenomenon of space as a unique, formal ground of all outer appearances. In chapter six, I will argue that this gives Kant an important advantage with respect to his Leibnizian critics, like Eberhard and Pistorius, because it points out that the original phenomenon of space cannot be reduced to an all-encompassing order or place of places. The original phenomenon of space is not grounded in an objective order of spatially situated simple substances (noumena), for such an order is never continuous and hence extended in itself. On the other hand, Kant cannot exclude the possibility that there is a correspondence between the order of spatially localised phenomena and the order of coexistence of noumena.

Finally, in the *seventh chapter* I try to link Kant's Transcendental Aesthetic to his discussion of transcendental reflection. Transcendental reflection is a reflection on the origin of representations, in either sensibility or understanding. Without transcendental reflection, the original determinations of the pure form of sensibility cannot be isolated and analysed, in agreement with Kant's original plan for a general phenomenology. Transcendental reflection is at the origin of Kant's science of space, which uncovers the determinations of the original phenomenon of space which are fundamental to prove the transcendental ideality of space. Transcendental reflection lets us know space purely as a form and hence as a limit of all outer sensible knowledge.

Transcendental reflection fails when it mistakenly conceives space as a form of understanding, rather than as a form of sensibility. The result of this error is a transcendental amphiboly, a confusion of phenomena with noumena, which leads to a misapplication of the predicates of space and time to noumena. This is the source of the spurious concepts of spatiotemporal noumena, which belong to the illusory part of metaphysics.

In chapter seven, I will argue that Kant's analysis of the origin of the spurious concepts of metaphysics gives an important insight into his critique of Leibnizian metaphysics. Though partly unjustified, it helps to uncover the rationales behind Kant's discussion of the mathematical antinomies of rational cosmology, which are rooted in the spurious concept of a spatially extended noumenal world of simple substances. Dissolving the spurious concept of an extended noumenal world and hence also the mathematical antinomies, is possible only from the standpoint of transcendental reflection, which is the same standpoint from which we know the limits of sensible knowledge and the transcendental ideality of space. This provides Kant with an indirect argument for the transcendental ideality claim, which he amplifies by showing how the recognition of the transcendental ideality of space makes it possible to reconceive the mind-body union, and the nature of the omnipresence of God.

2. Monads, Places, and Space in the Metaphysics of the Young Kant

2.1 Background: Leibniz on Monads, Places and Points of View

The best way of introducing the young Kant's discussion of monads, places and space is to begin where it all starts, namely with the philosophy of Gottfried Wilhelm Leibniz (1648-1716) and his notion of monads.¹⁰¹ In the *Monadology* Leibniz gives the following explanation of the concept of a monad:

The Monad, which we shall discuss here, is nothing but a simple substance that enters into composites – simple, that is, without parts (*Theodicy*, sec. 10). And there must be simple substances, since there are composites; for the composite is nothing more than a collection, or *aggregate*, of simples. But where there are no parts, neither extension, nor shape, nor divisibility is possible. (*Monadology* §§ 1-3, G VI 607, AG 213)

Leibniz starts in other words with the fact that there are phenomena, such as material bodies, which are composites, from which he concludes that material bodies ultimately must consist of parts, which are not composites in their turn. Composites, such as material bodies, are in other words aggregates of monads, according to Leibniz, i.e. aggregates of parts, which ultimately are perfectly *simple*. Leibniz thus rejects some of the major tenets of corpuscularian ontology and physics. Though monads are indivisible, like the atoms, they are without exception simple things.

From the simplicity of the monads Leibniz also concludes that they are *substances*, for that which exists without being a composite of another part can exist solely as a subject, i.e. can exist without existing as a predicate of something else.¹⁰² However, a monad is not just a subject because it is ontologically independent of the whole of which it is a part, but because it exists as a subject of actions. Thus, a monad has or even is a *principle* or *primitive active force* (*entelechy*), which involves a striving (*conatus*) to pass from one state to another.¹⁰³

Leibniz describes these states as perceptions, for the state of a monad, in which all its inner properties are united, cannot exist without representing and being represented in things which are external to them, namely the composites.¹⁰⁴ Insofar as a perception is less confused than the

¹⁰¹ Leibniz, *Monadology*, §§1-19, G VI 607-10, AG 213-15.

¹⁰² Leibniz's notion of substances as things which exist only as subjects was developed already in the midyears of his career (1680-1704), as Leibniz's discussion of the concept of substance in the *Discours de métaphysique* §8, G IV 432-3, testifies. That a substance is a subject, which can exist, even if it is not the predicate of another thing, is only a "nominal definition" of the concept of a substance, according to Leibniz. Presumably, this definition is not sufficient in order to have a real definition of the concept of a substance, which expresses what belongs to the (real) possibility of a substance. For a more detailed discussion of the concept of substance as an ultimate subject, see Rutherford (2003, pp. 121-2).

¹⁰³ *A New System of Nature*, First Draft, G IV 472; *A New System of Nature*, G IV 479.

¹⁰⁴ Thus in *Principles of Nature and Grace* § 1, G VI 598, L 636, from 1714, Leibniz explains that perceptions are "representations of the composite, or what is external, in the simple." C.f. *Monadology*, § 14.

perception that precedes it the monad acts, according to Leibniz.¹⁰⁵ However, if the monad passes to a perception, which is more confused, the monad suffers.¹⁰⁶ The monad must therefore have a *primitive passive force*, complementary to its active force, which varies with the degree of its confused perceptions.

Leibniz concludes that the monads cannot originally have any of the external properties, which typically belong to composites, such as extension and shape.¹⁰⁷ Instead, monads relate to other monads by virtue of their perceptions, i.e. actions and states, which are *absolutely internal* to the monad. Monads must therefore be distinguishable by properties, which cannot be reduced to *relations*, such as situation (*situs*), duration and interaction (*commercio*).¹⁰⁸ In Leibniz's terminology, the monads obey the so called *principle of the identity of indiscernibles* (or *principle of individuation*), according to which there can be no pair of individuals which share all their inner properties or *qualities*:¹⁰⁹

However, monads must have some qualities, otherwise they would not even be beings. And if simple substances did not differ at all in their qualities, there would be no way of perceiving (*s'appercevoir*) any change in things, since what there is in a composite can only come from its simple ingredients; and if the monads had no qualities, they would be indiscernible from one another, since they do not differ in quantity. As a result, assuming a plenum, in motion, each place would always receive only the equivalent of what it already had, and one state of things would be indistinguishable from another. It is also necessary that each monad be different from each other. For there are never two beings in nature that are perfectly alike, two beings in which it is not possible to discover an internal difference, that is, one founded on intrinsic denomination. (*Monadology* §§ 8-9, G VI 608, AG 214)

One of the main problems of Leibniz's monadology is to explain how it is possible for simple monads to become parts of extended composites, given their nonmaterial and unextended nature. Here it is helpful to note that Leibniz, during the earliest stage of his career, in the first half of the 1670s, started with a notion of substances, not as monads but as atoms or corporeal substances. Leibniz conceived these corporeal substances more or less similar to those of Aristotle, in the sense that he considered them as the outcome of a union between matter and form. The form Leibniz identified with the soul of the corporeal substance. In order to explain how this soul can enter into contact with, and act upon, the matter of the corporeal substance, Leibniz assumed that the soul must have a certain location. The soul is not an extended *atom* or *physical point*, like the body that results from its union with matter, but it has a place, a *mathematical point*, from which it views everything.

¹⁰⁵ *New Essays*, p. 210. Perceptions are confused, to the degree they contain undistinguished perceptions, which cannot be brought to our attention. When the number of undistinguished perceptions diminishes, the perception becomes more distinct.

¹⁰⁶ See for instance *Lettre à Reymond*, G III 636 and *New Essays*, p. 210.

¹⁰⁷ This is explicitly stated in *Principles of Nature and Grace*, G VI 598, AG 207.

¹⁰⁸ See "Notes for Leibniz to Des Bosses, 5 February 1712", G IV 438, AG 199. In other words, the simple substances can exist independently of any relation that holds or may hold between them. The simple substances are *ontologically independent*, an independency that seems to go hand in hand with a certain *causal independency*, for if a substance is simple then it cannot be altered by any external causes, i.e. the kind of causes that are at play when the structure of the material bodies changes. As Watkins (2005, p. 33) correctly observes the ontological independence of Leibniz's substances is grounded in their self-sufficiency, even if they are the consequence of a common cause, namely God.

¹⁰⁹ Inner properties also involve quantities, but we cannot represent these quantities (distinctly) unless we relate them to each other.

In a letter to Duke Johann Friedrich, dated 21 May 1671, Leibniz defends this contention based on an analysis of the conditions under which experience is possible:

(...) thus when I want to ascertain myself, that a body handed over to me is of gold, I combine its glitter, sound, and weight, and conclude from this that it is of gold. The mind must therefore be in a place, since all the lines of the sight, hearing, [and] touch [*visus, auditus, tactus*] coincide, and that in one point. If we give the mind a larger place than a point, then it is already a body, and has *partes extra partes*; it is then not intimately present [*intimae praesens*], and cannot reflect upon all its parts and actions, which, however, is the essence of the mind. Posited that the mind consists in one point, it is indivisible and undestroyable.¹¹⁰ (G I 53)

Thus in this letter Leibniz seems to claim that the soul has or even *is* a place,¹¹¹ a place that he identifies with a mathematical point.¹¹² The soul is the form, which acts upon the extended matter, giving it structure and motion, without itself having extension.¹¹³ Ultimately, it is the latter actions, which makes the mind united with matter into a *corporeal substance* or *atom*. Moreover, Leibniz thinks that he can explain it in a way which preserves the indivisibility and immortality of the soul; far from depriving the soul of its spiritual properties, the analysis of the *situatedness* of the soul proves that these properties also are properties of the point from which it views the world of material bodies.

Just a couple of years after his letters to Duke Johann Friedrich, however, Leibniz seems to have realised that the different situations of souls and atoms are insufficient to explain the individuation of souls. As Christina Mercer and R. C. Sleight have observed, in the mid-1670s Leibniz seems to have identified the principle of individuation of souls with the rule or principle in agreement with which their perceptual states develop.¹¹⁴ Souls are individualised by the different points of view from which they mirror the world, i.e. by the principles in accordance with which their perceptions are produced, principles which are internal to them.¹¹⁵ Thus, the point from which the soul views the world cannot be a mathematical point, for souls are not *immediately* located and individualised in space. Instead, the soul is a *substantial unity*, which is individualised by its rules of action, actions that result in sensations or thoughts, not in motions.¹¹⁶

Though it is easy to imagine that Leibniz wants to disassociate souls (and more generally all substances) from places and hence to avoid any associations between points of view and places, he frequently invites to the opposite. Thus, Leibniz often describes the points of view of the substances as analogous to the points of view of a person, who perceives one and the same town from different

¹¹⁰ My translation, J.J.

¹¹¹ Leibniz is less ambiguous in a letter to Arnaud written in November the same year as his letter to Duke Johann Friedrich, where he explains that points are “*loci*” of the mind and hence not minds themselves; see G I 72.

¹¹² Russell (1964, p. 123) defends the view that Leibniz identified souls with mathematical points in the early 1670s. For a different interpretation see Mercer/Sleight (1998, pp. 81-4).

¹¹³ For a discussion of Leibniz’s earliest notion of corporeal substance, see Mercer/Sleight (1998, pp. 76-84).

¹¹⁴ Mercer/Sleight (1998, pp. 91-2).

¹¹⁵ In the terminology of Mercer/Sleight, these principles can be described as “production rules”.

¹¹⁶ Mercer/Sleight (1998, p. 91). The matter of the corporeal substance is not sufficient or even necessary in order for the soul to perceive; all that the soul needs to have a perception is that it acts in accordance with a certain rule.

perspectives, for instance from a high point or from a plain.¹¹⁷ Leibniz repeats the same town analogy in the 1680s, namely in the “Discourse on Metaphysics” (*Discours de métaphysique*), from 1686:

Moreover, every substance is like a complete world and like a mirror of God or of the whole universe, which each one expresses in its own way, somewhat as the same city is variously represented depending upon the different positions from which it is viewed. Thus, the universe is in some way multiplied as many times as there are substances, and the glory of God is likewise multiplied by as many entirely different representations of his work. (*Discourse on Metaphysics* § 9, G IV 434, AG 42)

Furthermore, the *Discourse on Metaphysics* gives strong indications that Leibniz now connects the substantiality of the corporeal substance primarily with its form, rather than its matter. Leibniz does not completely sever the soul from the matter of the corporeal substance, but he gives it more metaphysical weight, so to speak, by taking the soul as that which “constitutes” the substance of the body.¹¹⁸ The soul is no longer a mere complement to the matter of the corporeal substance, but a substance in its own right.

Leibniz’s thinking about how substances can be linked to space is further developed in “A New System of Nature” (*Système nouveau pour expliquer la nature et de la communication des substances, aussi bien que de l’union qu’il y a entre l’âme et le corps*) from June 1695. In the *New System* Leibniz sometimes reserves the term “point of view” for the mathematical points. However, on a closer look, mathematical points are merely places, which abstractly express what belongs to the possibility of a thing insofar as it is being situated in the same way as another thing.¹¹⁹ The point of view of a monad is rather a physical point, namely an extended organic body, contracted into a tiny but extended particle or corpuscle.¹²⁰

The point of view of the human soul, for instance, coincides with the human body, in spite of the fact that the body is an extended, physical point and not a mathematical point, as Leibniz explains in the first draft to the *New System*. Thus, in the draft Leibniz tries to explain that everything which occurs in the soul, occurs,

(...) in the succession of time, through the sequence of thoughts and so to speak like in ordered dreams (or preferably internal phenomena) so true that they successfully predict the future, and all this independently of the external world, but in conformity with the rest of the universe, and in particular with the organs of the body which constitute its *point of view* [my italics, J.J.] in the world, and in which the union of the soul and the body consists.¹²¹ (G IV 477)

¹¹⁷ Leibniz’s use of the town analogy, in his writings in the 1670s, are discussed by Mercer/Sleigh (1998, pp. 96-8).

¹¹⁸ *Discourse on Metaphysics* § 12, G IV 436, AG 44.

¹¹⁹ Leibniz technically makes a distinction between situation (*situs*) and place (*locus*), during the mature phase of his thinking, e.g. in his correspondence with Clarke (1715-16), most notably Leibniz’s Fifth Paper, section 47.

G VII, p. 400-1. Generally, Leibniz connects situations with a thing’s mode of coexisting with other things, whereas place abstractly expresses what belongs to the possibility of being in the same situation as another thing. For instance if A is in the same place as B, then this abstractly expresses that A’s mode of coexisting with C, D, etc. agrees with B’s mode of coexisting with C, D, etc. For a magisterial discussion of Leibniz’s concepts of situation, sameness of situation (congruency), place, and modes of coexistence, see De Risi (2007, pp. 131-5, 477-86, 558-9).

¹²⁰ Thus, physical points are indivisible “only in appearance” as Leibniz expresses it in the *New System*. For a discussion of this passage, see Russell (1964, p. 105).

¹²¹ My translation, J.J.

Hence, what the first draft seems to suggest is that monads cannot have a point of view unless they are embodied, and in this respect, they resemble the soul of an animal or human being.

For a monad to be a soul, which is united with a body, is for the soul and the body to express themselves immediately in each other. The immediateness of this mutual relation makes the monads of the body subordinated to the body and ultimately the soul. As Adams observes, this is not only to be understood in terms of the dominating monad expressing more distinctly what happens in its own body than the rest of the world, but in terms of explanatory directness by which their expressions agree:

An organic body stands in this relation to its dominant monad alone, not to the subordinate monads in it – though they do of course contain expressions of it. This is an important part of the structural relationship between a monad and its organic body by which monadic domination is constituted. An organic body is an expression of its soul or dominant monad. Leibniz has less to say about this than about the soul's expressing its body, but expression as he understands it is a relation of one-to-one mapping, which will normally be symmetrical. So if each monad is an especially good expression of its body, the organic body will be, reciprocally, an especially good expression of its dominant monad.¹²²

Monads and bodies express themselves in each other, but it is only the expression of the dominant monad (soul) which is a perception.¹²³ Insofar as the dominant monad perceives the impressions on its body distinctly it acts, for instance when my hand moves at my will to lift it. On the other hand, if the dominant monad suffers, it perceives the impressions confusedly, which explains why it has a confused perception of its own body as extended and situated in a world of other extended bodies. There is hence a kind of mutual mapping relation between the states of the dominant monad, the states of its phenomenal organic body, and the states of the organic bodies of all other monads, in the sense that they and their states are mutually mirrored or expressed in each other. However, because of the confusion in the perceptions, the mapping is distorted, so that for instance a phenomenon can be an expression of more than just one monad, or just originate from a confused perception, rather being an expression of a monad.¹²⁴ Leibniz scholars have therefore concluded that the mapping from monads to phenomena cannot be perfectly isomorphic, but only homomorphic.¹²⁵

¹²² Adams (1994, p. 286).

¹²³ Thus, it is only an expression, which represents a multitude of bodily impressions within the unity of one monad, which is a perception. Monads with animal or human bodies have the capacity of receiving bodily impressions (on their outer sense organs) which are sufficiently distinctive or heightened to become sensations of outer objects; see *The Principles of Nature and Grace*, § 4, G VI 599, L 637. Sensations or sense perceptions of objects, which are sufficiently distinctive to be distinguished from other perceptions of objects, are clear, and when their contents are distinguished as well they are distinct. For a careful discussion of the difference between distinctive, clear and distinct perceptions, see Puryear (2006), in particular Chapter 3 and 4.

¹²⁴ This is for instance argued by De Risi (2007, pp. 431-2).

¹²⁵ The mapping is isomorphic if and only if four conditions are fulfilled: (i) at least one phenomenon corresponds to each monad, (ii) to each monad corresponds at most one phenomenon, (iii) each monad corresponds to exactly one phenomenon (i.e. the mapping is injective) and (iv) each phenomenon is an expression of exactly one monad (i.e. the mapping is a surjective). However, since the two last conditions are not fulfilled, De Risi (2007, pp. 429-33) concludes that the correspondence between monads and phenomena cannot be an isomorphism, but only a homomorphism, i.e. a partial isomorphism. An isomorphism is hence only possible as an ideal limit to the expressive relation between the phenomena and

From this it follows that monads can become situated or placed in space, not directly of course, but indirectly by virtue of their presence to an organic body, which they confusedly perceive as extended. This answers the question of how extended bodies and other composites can have monads as their simple parts in spite of their simplicity. Ultimately, bodies are nothing but aggregates of monads, i.e. discrete units, which appear as continuously diffused from the contracted point of view of the finite monads.

We find additional information about these issues in Leibniz's letters to Des Bosses. In one these letters (June 1707) Des Bosses questions how it is possible for extension to be a mode of non-extended things (monads).¹²⁶ In his answer to Des Bosses, one month later, Leibniz underlines that although monads lack extension in themselves we can link them to extension, by virtue of their position (*positio*), for extension is the "simultaneous continuous repetition of position (*positionis*)".¹²⁷ A letter to De Volder, written a couple of years earlier (20 June 1704), nicely parallels Leibniz's answer to Des Bosses:

For although monads are not extended, they nevertheless have a certain kind of situation [*situs*] in extension, that is, they have a certain ordered relation of coexistence with others, namely, through the machine which they control. I do not think that any finite substances exist apart from a body, or, therefore, that they lack a position or an order relative to the other things coexisting in the universe. (G II 253, L 531)

Thus, monads still have a situation in space indirectly, by virtue of their presence to an extended organic body, which they control.

Many commentators have questioned if Leibniz adequately explains how it is possible for the monad to have a physical point of view and hence also a place. For instance, even if one accepts Adams's version of the domination theory, the aggregation of monads into organic bodies seems to presuppose that these monads in their turn have an organic body and so on. Adams's version of the domination theory leads, in other words, to an infinite regress that threatens the explanation of how the subordination of monads, can make them into parts of the organic body of a dominant monad. Here Bertrand Russell's version of Leibniz's theory has the advantage that it only demands that every monad must *belong* to an organic body, not that it must *have* an organic body, as for instance Adams claims.¹²⁸ On Russell's interpretation of Leibniz, the order of the monad's coexistence with the other monads does not depend on how it perceives its own body, but on the different degrees of distinctness with which it perceives. The monad will dominate those monads, which have a lesser degree of distinctness in their perceptions. The monad can be attributed a point of view, without losing its existential and causal independency.

Furthermore Leibniz's contemporaries argued that the physical point of view of the monad is unnecessary in order for it to perceive the world from the point of view of its inner constitution. Thus, the expressive relation between the monad and its body is admittedly not *causal*, for according to Leibniz it is impossible for the monads and their bodies to influence each other. Monads can influence each other, only if their states "migrate" (*passer*) between each other, which is impossible since the states are accidents, which cannot exist without the support of some

noumena, according to De Risi (2007, pp. 338-41). Puryear (2006, pp. 13-15) speaks about the correspondence relation between monads and phenomena as an isomorphism, but as far as I can see he has a homomorphism in mind.

¹²⁶ G II 332.

¹²⁷ G II 339.

¹²⁸ Russell (1964, pp. 147-9).

substance, that is, a monad.¹²⁹ Every monad therefore expresses the universe in accordance with its own laws, without causally interacting with the other monads, in accordance with the hypothesis of the pre-established harmony (*Hypothese des accords*).¹³⁰

Given that there is no causal interaction between the soul and its organic body, but merely a harmonious correspondence, sensations might equally well occur independently of the alterations in our sense organs, as if we existed without a body. This was also something the sharp-witted canon of Dijon, Simon Foucher (1644-1696), had pointed out to Leibniz, in a critical remark to his *New System*, which was published in *Journal des Savants*, in September 1695.¹³¹ Thus, according to Foucher, Leibniz could not rule out the possibility that our perceptions occur even apart from our bodies and the outer world, within which they seem to be located. But then, why has God given us grounds to believe that our perceptions correspond to and are causally produced by alterations in the body, when that is not the case? Not only does it make God look like a rather unskilful artisan, but as a deceitful one too.

Foucher also suspected that the causal independency of the states of the monads would make the monads independent, not only of their bodies but of each other as well.¹³² Monads would in other words become detached from each other and hence lose their places in the world and in the material bodies in particular. Even as aggregates of monads bodies are, still, nothing but *phenomena*, according to Foucher, “chimerical composites” which lack the intrinsic unity that is characteristic of the simple substances. The harmony between the states of the monads was an “artifice”, which really served no purpose; the states of the monad did not depend on the states of other monads and was solely the outcome of the actions of God or powers internal to the monad itself.

The theory of the pre-established harmony seems to put our entire belief in the outer world in question; if there is no causal connection between our thoughts and the material bodies, how can we ascertain ourselves of their existence? In the absence of a causal connection between material bodies and thoughts, our natural inclination to believe in the existence of the outer world will have no justification, other than the teachings of the Scriptures. This was also the conclusion of Nicolas Malebranche (1638-1715), a priest and philosopher whose work Foucher had made into an object of fierce criticism. Thus, according to Malebranche the immediate objects of our awareness are not material bodies, but ideas which exist in God’s mind.¹³³ We see all things in God, not in space.

Foucher’s critique certainly exaggerates the kind of causal independency Leibniz was prepared to attribute to the soul and its perceptions, as can be seen from his reply to Foucher.¹³⁴ On the other hand, Leibniz never denied that the mind’s union with God is stronger than its union with its body, as the exaltation of mystics, like St. Theresa of Avicenna, demonstrated. Seeing a town without eyes is of course absurd from the point of view of common sense, but perfectly conceivable given that the theory of the pre-established harmony and the theory of perception it supports are correct.¹³⁵

¹²⁹ *Postscriptum eines Briefes an Basnage de Beauval*, G IV 498-99; for a discussion of Leibniz’s arguments against a real influence between the monads, see Watkins (2005, pp. 27-8).

¹³⁰ *New System*, G IV 484-5, AG 144.

¹³¹ *Objections de M. Foucher*, G IV 488-9.

¹³² *Objections de M. Foucher*, G IV 488-9.

¹³³ See for instance, *The Search after Truth* III, ii, 6, p. 234.

¹³⁴ *Remarques sur les Objections de M. Foucher*, G IV 492.

¹³⁵ *New System*, G IV 484, AG 143.

As Leibniz admitted, there is only one outer object of which I am immediately certain: God. In that particular sense, there is an affinity between Leibniz and Malebranche, which Leibniz also openly recognises, in the dialogue *Conversation of Philarète and Ariste*:

I am convinced that God is the only immediate external object of souls, since he alone acts immediately on the soul. And our thoughts, with all that is in us insofar as it includes some perfection, are produced without any interruption by his continued operation. Thus, insofar as we receive our finite perfections from his infinite perfections, we are immediately affected by them; and that is how our mind is immediately affected by the eternal ideas in God, when our mind has thoughts that relate to them and participate in them. It is in this sense that we can say that our mind sees all things in God. (G VI 594, AG 268)

Passages like this explains, I think, why Wolff, and ultimately also Kant, tried to defend a more realistic notion of monads and material bodies. Because of this critique, Leibniz's monadology evolved into a more realistic, physical monadology. To these developments, I turn now.

2.2 Physical Unities, Places, and Space: Wolff's Response

It is well known that relatively little of Leibniz's philosophical writings were published during his lifetime, and that the attitude towards Leibniz's philosophy was growing less favourable in the immediate years after his death, not only in England and France, but also in Germany. The objection, which Leibniz's contemporaries raised against his ontology of monads, concerned its ability to present a viable and consistent realist notion of material bodies. The attacks on the theory of the pre-established harmony did not contribute to Leibniz's reputation in Europe.

The situation in Germany was however a little bit different from the rest of Europe. In the early 18th century Germany was becoming increasingly independent, from the influences of its neighbours – France, Austria, Sweden, etc. – not only politically, but also culturally. The enlightenment in Germany made its way under national banners. The leader of the philosophical formation of this movement, Christian Wolff (1679–1754), was staunchly defending Germany's colours and hence also the reputation of its greatest mind – Leibniz. Wolff's defence of the reputation of his hero and mentor included a reply to the objections of Foucher, among them the allegation that material bodies had evaporated in to chimerical composites, within the system of Leibniz. Wolff's response is interesting because it relates to the issue of the ontological status of the material bodies, the simple things and the order in accordance with which they coexist.

Like Leibniz, Wolff defines simple things as things which have no parts.¹³⁶ The collorary of this definition is that simple things cannot have an extension or shape. Thus, according to Wolff, the extended is impossible without a plurality of parts, and shape is a property of the extended, insofar as its extension is limited. The simple parts of the material bodies are limited only because they exist in a determinate *inner state*, which makes them different from each other, in accordance with the principle of individuation.¹³⁷ These inner states are furthermore alterable, for they involve not only necessary, immutable properties of the simple thing (essences and attributes), but also their contingent, mutable properties (modes).¹³⁸ Since the alterations of the inner states cannot be groundless, it follows that the simple things are endowed with certain primitive active forces. The

¹³⁶ Wolff, *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 75.

¹³⁷ *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 586.

¹³⁸ The last point is elaborated by Wolff in *Prima Philosophia sive Ontologia*, §§ 705-6.

simple things are in other words substances, namely “monads” or “physical unities” (*Einheiten der Natur*).¹³⁹

However, the real touchstone of Wolff’s more realistic notion of simple substances is its ability to explain how it comes that simple substances can be in an *outer state*. Wolff’s answer to this question is based on the assertion that the simple substances coexist with each other, and that each substance therefore has a *mode of coexisting* with the other substances, which makes it localised *outside* them. The *position* of a thing in the order of coexistence, i.e., its mode of coexisting with other things, is literally a *place* in space. Even if the simple substances have no shape and do not fill any space, Wolff can still argue that it must be possible for the physical unities to be located in space.

Wolff’s argument for this ontological and cosmological thesis is, however, based on phenomenological considerations, which we will later recognise in Kant’s Transcendental Aesthetic.¹⁴⁰ Thus, according to Wolff we cannot be conscious of things distinct from ourselves, except by being conscious of them *outside* ourselves.¹⁴¹ Likewise, insofar as we also are conscious of these things as simultaneously distinct and different from other things, we represent them as coexisting outside one another.¹⁴² Typical of the latter representation is that it involves and comes with a certain *order*. In other words, we cannot represent one thing as the first, without representing the other thing immediately next to it as the second, and the one next to the second one as the third, etc.¹⁴³ We therefore represent outer things in *space*, for space is nothing but the order of things, which coexist.¹⁴⁴

Like all other determinations, the place of a thing cannot be groundless; there is a reason why this pencil exists immediately next to that mug and not another thing, etc.:

If among the simultaneous things, one contains in itself the reason why the other is simultaneously next to it, then each one has its particular mode, how it is simultaneous with the others. Each one has therefore its particular place, and is connected with all the others in space.¹⁴⁵ (*Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 546)

Much like Leibniz, Wolff argues that we can find the ground or reason for the particular location of a thing in the inner states of its parts, i.e. in the inner states of the physical unities and not in the empty mathematical space:

Because everything has its sufficient reason, why it is rather than not, it follows that there must be a sufficient reason why each one of them is to be found at the side of this one and not another one. But now since also here the ground is to be searched for neither in space, nor in time – namely insofar as they must be taken as empty of the things that are situated in them – it follows that the ground must be found in those things that exist next to each other, and hence also in the inner states of the simple things.¹⁴⁶ (*Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 594)

¹³⁹ *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 599.

¹⁴⁰ See Chapter 6.

¹⁴¹ *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 45.

¹⁴² *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 45.

¹⁴³ *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 46.

¹⁴⁴ *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 46.

¹⁴⁵ My translation, J.J.

¹⁴⁶ My translation, J.J.

The physical unities are not engulfed in themselves; on the contrary, they are “connected” (*verknüpft*) with each other, because of the conformity or agreement, which holds between their inner states. That the inner state of a physical unity immediately *agrees* with the inner state of *another* physical unity thus explains why they are represented *next* to each other. But since the inner state of a physical unity depends on the degree of its force, it follows that the forces of the physical unities have to agree and be connected with each other, in order to explain the places of the physical unities. Likewise, the alterations in the states of the simple substances are also grounded outside them, but not without the mediation of the forces within the substances.¹⁴⁷

This explains why Wolff attributes not only primitive active forces, but also primitive passive forces to the simple substances.¹⁴⁸ The active force brings about an alteration of the inner state of a simple substance, which answers to a passive force in the other simple substances, coming to expression as a corresponding alteration in their inner states. The forces that connect the simple things are, however, not necessarily identical with those forces of representation that must be ascribed to all monads, according to Leibniz.¹⁴⁹ Leibniz never proved that there is a single, universal force common to all simple things, so the inner states of the simple substances are not necessarily identical with perceptions.¹⁵⁰

Wolff is far from easy to follow, but as will be seen he seems to think that the impossibility of ascribing one universal force to all simple substances makes it difficult to explain and determine exactly how the forces and states of the simple substances are connected and brought into harmony with each other.¹⁵¹ In other words, Wolff does not declare if he thinks that the harmony between the forces and states of the simple substances depends on a causal interaction, or if it is pre-established, in accordance with Leibniz’s theory. In either case, the result is that the simple substances connect with all substances that coexist “outside”¹⁵² (*ausser*) them in the world. Thus, the alterations in the states of the simple substances depend on what happens outside the simple substances themselves.¹⁵³

Wolff thus never demonstrates that the coexistence of the physical unities is an outcome of a causal interaction, rather than a mere agreement between their states. Even if a causal interaction between their forces and states of physical unities connects them, it is far from evident that this necessarily makes them coexist *outside* one another and the mind that represents them. There is nothing which seems to prevent physical unities from coexisting with other qualitatively different physical unities, without existing outside each other, as long as their states agree with each other, be it as a result of causal interaction or not. It is true that we cannot reduce the outsideness of the physical unities to a relation between points of view, like the monads of Leibniz, but this does not grant that they coexist outside each other. For the relation of outsideness belongs to things, including the simple things, as a result of how they are perceived by us, insofar as we perceive them as being different from each other.

¹⁴⁷ *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen* § 105.

¹⁴⁸ *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 697.

¹⁴⁹ *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen* § 600.

¹⁵⁰ *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen* § 600 and *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen, Anmerkungen*, § 215.

¹⁵¹ *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 600 and *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen, Anmerkungen*, § 216.

¹⁵² Wolff uses the word “outside” in an ambiguous way: originally it signifies that a thing is different from us and other things, but more narrowly it applies to things that are different from each other in space; c.f. *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 45.

¹⁵³ *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 602.

Finally, the physical unities cannot add up to something extended just because they occupy a place. The physical unities might very well occupy a space, but because of their simplicity, it is impossible for them to fill a space. As will be seen, this will be important for the understanding of the further developments of Wolff's realist program for simple substances. It was these developments, which finally led to Kant's notion of simple substances as physical monads, which not just occupy, but fill a space, and which hence can become parts of extended material bodies.

2.3 Monads, Places and Physical Influx: Knutzen's Arguments

Historians of philosophy seldom mention Martin Knutzen (1713-1751), except as the Kant's teacher in philosophy, and in particular as the teacher who introduced Kant to the physics of Newton. In his *Commentary to Kant's "Critique of Pure Reason"*, Norman Kemp Smith gives the following assessment of Knutzen:

It was to his teacher Martin Knutzen that Kant owed his first introduction to Newtonian cosmology; and from Knutzen he inherited the problem of reconciling Newton's mechanical view of nature and absolute view of space with orthodox Leibnizian tenets.¹⁵⁴

One does not have to share Kemp Smith's assessment in all its details in order to convince oneself of the affinities between Knutzen and the young Kant. The biographies of Kant and Knutzen overlap, not only because Knutzen taught Kant, but also because they shared the same pietistic predilections and backgrounds. Though Kant was a son of a saddler, and Knutzen the son of a Danish merchant, they both lived in the vicinities of Königsberg during their entire lives.¹⁵⁵

The influence of the Pietists of Königsberg is reflected in Knutzen's philosophical education and project. In agreement with the teachings of the Pietist Friedrich Albert Schultz, Knutzen tries to show that the metaphysics of Wolff is perfectly consistent with Pietistic faith and theology. One side aspect of this project includes a more elaborated defence of Wolff's realistic notion of material bodies, according to which material bodies are aggregates of simple substances. However, contrary to what can be expected, Knutzen does not start with the assumption that the bodies consist of physical unities, as Wolff did; instead Knutzen describes the simple substances as perceivers, like the monads of Leibniz.¹⁵⁶

Knutzen's attempt to provide a defence of Wolff's more realist notion of material bodies does not stand firmer than its ability to explain how it is possible for monads to be localised in space. Knutzen's answer to this question follows mainly along the same line as Wolff; the monad is in a place merely because it coexists with other monads in an orderly fashion:

Space is the order of coexisting things, insofar as they coexist. A thing in which such an order of coexisting is given is said to *fill space*. *Place* [*Locus*] is the determinate and finite mode of coexisting with the rest

¹⁵⁴ Kemp Smith (1999, p. 161).

¹⁵⁵ In his study of Knutzen, Benno Erdman (1875, p. 48) describes Knutzen as a "son of Königsberg", who never left his hometown.

¹⁵⁶ Knutzen, *Systema causarum efficientium*, § 18.

of the coexisting things, or the order of continuous coexistence. *Position* is the order of non-continuous coexistence.¹⁵⁷ (Knutzen, *Systema causarum efficientium*, § 23)

Knutzen's explanation of the situatedness of the monads is, however, different from Wolff's explanation, namely because it presupposes that the coexistence of the monads is an outcome of their causal interactions with each other. Unlike the monads of Leibniz, causal interactions between the primitive forces of Knutzen's monads determine their perceptual states, in accordance with the theory of physical influx.¹⁵⁸ The hidden premise behind this contention is the claim that monads are endowed with certain primitive forces of perception *and* motion, which derive from each other, or have an identical source (*fons*).¹⁵⁹ Knutzen thus resuscitates Leibniz's notion of universal forces, but in a way that lets him prove that the effects of these forces are intersubstantial and not just intrasubstantial. Regardless of whether Knutzen's strategy is successful or not, the end-result is a drastic radicalisation of Wolff's critique of the theory of pre-established harmony.

Watkins discusses Knutzen's arguments for the theory of physical influx in detail, so I will restrict my discussion to the points that are relevant for our purposes.¹⁶⁰ Knutzen's arguments divide into four or perhaps five groups, of which the two first are the most interesting in the present context. In his *first* argument, Knutzen builds on Leibniz's familiar contention that a thing can move *itself* by its forces of motion, but unlike Leibniz and like Wolff, he argues that these forces can move *other* things as well.¹⁶¹ Knutzen supports this claim on the premise that motion is a modification in the location of the thing grounded in some action, caused by the forces of motion of the thing. For a thing cannot move itself by its derivative force, unless it takes the place of another thing, as is illustrated by the example of colliding bodies:

Therefore, a being endowed with the force of moving itself strives to push other things away, if they resist. But if they are truly also supposed to yield spontaneously, still what is already participating in progressive motion exerts itself in the way that is required to complete the motion beyond itself or to push other things away, since resistance is only the occasional cause of motion and does not add anything to the intrinsic force. Therefore, a being that moves itself enjoys the effort of changing the place of coexistents or the force of moving other things (§24). Therefore, the force of moving itself cannot be conceived without the force of moving other things, but after the one has been posited, the other is posited at the same time.¹⁶² (Knutzen, *Systema causarum efficientium*, § 28)

However, since the forces of motion ultimately derive from the simple substances out of which the bodies are composed, it follows that the simple substances must have primary, active forces of motion, by which they move each other. Implicitly this means that Knutzen rejects Leibniz's famous dictum that "every passion of a body is spontaneous or arises from an internal force, though on the occasion of something external".¹⁶³ The derivative forces of motion of the body are, in other words, not only *occasions* for, but also *causes* of the motions of the other bodies, according to Knutzen.

¹⁵⁷ My translation, J.J.

¹⁵⁸ Knutzen, *Systema causarum efficientium*, §§ 10, 21, 23, 29.

¹⁵⁹ *Systema causarum efficientium*, § 45.

¹⁶⁰ Watkins (2005, pp. 50-73).

¹⁶¹ Knutzen, *Systema causarum efficientium*, § 28; cf. Wolff, *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen* § 620.

¹⁶² Translation in Watkins (2005, p. 54).

¹⁶³ Leibniz, *Specimen Dynamicum*, L 448.

Watkins identifies a number of weak spots in Knutzen's first argument, namely that the same result could be obtained if the derivative force of the moving body acts jointly with the derivative force of the body that is moved.¹⁶⁴ In that case, it is possible to argue that the first body moves itself by its force of motion, without causing the motion of the second body, since the cause of the latter motion is the force of motion of the second body. The motion of the latter, which appears to be the outcome of a passion, is truly nothing but the result of an action, caused by its moving force. This seems to be consistent with the fact that Knutzen's notion of physical influx is different from Baumgarten's notion of real influence. Thus, according to Knutzen, no *transmission* of forces occurs between the monads that act upon each other; the monad, which acts upon another monad, only *modifies* the force of the latter.¹⁶⁵

On the other hand, it would still follow that the moving force of the first body would be part of the ground or condition of the motion of the second body.¹⁶⁶ The reason for this is that the action of the moving force of the first body conditions the outcome of the action of the moving force of the second body. As Watkins observes, this conclusion seems warranted by Knutzen's way of defining the acting of a thing as something, which occurs when it contains the reason for the existence, or modification of a certain (*cuiusdem*) thing.¹⁶⁷

In the *second* argument, Knutzen tries to show that it is necessary to ascribe not only active, but also passive forces of motion to the simple substances.¹⁶⁸ The premise of Knutzen's argument is that no monad can exist in exactly the same place as another monad, which means that all monads have to be impenetrable, in spite of the fact that the monads cannot fill a space. Knutzen furthermore argues that the impenetrability cannot be an original primitive property of the monads. Instead, Knutzen argues that the impenetrability of the monads is the outcome of the force that a monad exerts when it collides with and resists the moving force of another monad. The impenetrability of a monad is hence the outcome of a passive force, which makes it impossible for the monads to penetrate each other mutually. The same force explains why colliding bodies only change their shape, and the velocity and direction of their motion:

Since it is most certain that simples are moved and that distinct simples are not moved according to an opposite line of direction, it is consequently impossible that they penetrate each other mutually, or rather what we may gather from the conflict of bodies and their collision is that in fact they are carried in a contrary direction mutually from each other. It follows in this case that one must hold that either simples

¹⁶⁴ Watkins (2005, p. 55).

¹⁶⁵ On Baumgarten's concept of real influence it must, however, be possible for the state of a substance to alter, purely because of alien forces belonging substances "outside it" (*extra se*), without the help of any forces and actions within the substance. The forces of substances outside the substance are not only part of the *explanation* of the alterations in it and in this sense, their influence is *real*, not merely ideal. See Baumgarten, *Metaphysica*, §§ 210-12.

¹⁶⁶ Watkins (2005, p. 55) speaks about forces being *causes* of the exercising of the forces of other bodies. However, to me it seems as if this is a somewhat illicit use of the term "cause", for in Wolffian ontology the term "cause" is reserved for things, e.g. forces, that are sufficient reasons for the existence of other things, states, actions etc. The force or action of the first body would then not be a cause, but part of the explanation of the acting of the force of the second body.

¹⁶⁷ For a closer discussion of Knutzen's concept of action, see Watkins (2005, p. 57). Watkins's discussion refers to Knutzen, *Systema causarum efficientium*, § 21. As far as I can see, Wolff is more restrictive in his way of defining an action, namely as a modification in a state of a thing grounded within that thing itself, or more simply an alteration grounded in nothing else but the thing which alters; see Wolff, *Philosophia Prima sive Ontologia*, § 713.

¹⁶⁸ Knutzen, *Systema causarum efficientium*, § 29.

penetrate each other mutually, which goes against Leibniz's assertions, or if they resist each other mutually, they must act on each other mutually.¹⁶⁹ (Knutzen, *Systema causarum efficientium*, § 29)

On these premises, Knutzen argues that a monad is penetrable, unless it acts upon other monads, in accordance with the theory of physical influx. Together with the active forces, the passive forces explain why the simple substances and the bodies act upon each other, which is exactly what follows if the theory of physical influx is correct.

Interestingly there is a counterargument against Knutzen's second argument, which has bearing on the first argument as well. For as Watkins points out, the Leibnizians can always argue that the passive forces in the second argument are ontologically equivalent to the active forces in the first argument, in the sense that both are derivative forces, which apply to material bodies only.¹⁷⁰ The only difference between the passive and active forces of motion is that the first deals with motions that are the outcome of *reactions*, whereas the second deals with motions that result from *actions*. In both cases, they are forces that strictly apply only to bodies.

Knutzen will of course answer that the forces of the monads would have to ground or cause the derivative forces and the motion they cause. But, as Watkins correctly observes, it is far from clear how the primitive forces are supposed to be translated into derivative forces, a question which brings attention to another, more general difficulty attached to Knutzen's defence of the theory of physical influence, a difficulty which is intimately connected with our discussion of the ontology of monads and space.

For as we have seen so far, Knutzen's argument for the theory of physical influx hangs on the premise that it is possible for monads to be localised in space. It simply does not make sense to ascribe primitive forces of motion to monads, let alone deriving the forces of bodies from these primitive forces, unless it is possible for the monads to move, which of course presupposes that they have a location in space. What makes the case so difficult for Knutzen here is that the latter is a mode of coexisting, supposedly determined by the physical influx between the monads, which seems to make his first two arguments circular.

Knutzen could of course break this circle, by assuming that the monads are localised in space already from the outset of their interaction, but then he would have to abandon his relationalist theory of space and consider the monads more like the corpuscles of the atomists. As Watkins correctly notes, Knutzen seems to require a notion of monads that is closer to that of physical atoms than that of souls:

Knutzen claims that the simple elements that compose bodies (which he thinks of as corresponding to Leibnizian monads) are spatial to the extent that they are *in a place* even if they are *not extended* (and thus indivisible). That is, Knutzen's simple elements would seem to be not just metaphysical, but also physical points. (...) What exactly is a metaphysical point and does Leibniz have any reason for thinking that it could not be physical as well? It is striking in this context that Leibniz (at least in his texts publicly available in early eighteenth-century Germany) never seems to consider the possibility that monads might be physical points in this sense. In the "New System of Nature," he says that the substantial unities required for being (i.e., monads) can be neither mathematical points (since mathematical points are "merely modalities," i.e., abstractions from reality rather than realities themselves) nor physical points, but are

¹⁶⁹ Translation in Watkins (2005, p. 61).

¹⁷⁰ Watkins (2005, p. 62). Watkins also points out that it is possible for the Leibnizian to argue that the impenetrability reduces to the "metaphysical fact" that a substance cannot be at the same place as another substance. For the details and problems with this argument, see Watkins (2005, p. 61).

rather metaphysical points. But his “justification” of the claim in this passage seems to presuppose that physical points are extended organic beings, rather than truly indivisible, physical points. (...) In other words, he seems to think that physical points are organic beings and, “if contracted,” can appear to be indivisible, but are in fact divisible (as organic beings would be, since they are extended).¹⁷¹

Though Watkins’ reconstruction of Knutzen’s notion of monads is basically correct, it seems as if he somewhat underestimates the difficulties involved in Knutzen’s attempt to show that monads can be endowed with a place, and not just a point of view. There is no shortcut from metaphysical points to physical points. Here one can object that the physical points Watkins has in mind are more like simple substances than atoms or corpuscles. However, even if one carefully keeps this distinction in mind, as Watkins does, Leibniz would still insist that monads, not physical points, are the only acceptable candidates for simple substances. For according to Leibniz, only soul-like things can match the demands of ontological, causal, and conceptual independence connected with substances.

Furthermore, souls are not immediately localised in space. Thus, if all simple substances are like souls, then it makes no sense to speak of them as localised, except in the sense that they view things from the point of the bodies they dominate. In other words, Leibniz would insist that he is entitled to keep the distinction between monads (metaphysical points) and bodies (physical points).

Finally, even if Knutzen’s explanation of the localisation of monads is acceptable, there is still a great, perhaps insurmountable leap from the point-like places of his monads, to the three-dimensional volumes occupied by material bodies. Knutzen just presupposes from the outset that monads are in places, and that place is a mode of *continuous* coexistence, rather than a mode of discrete coexistence (position), without providing an argument for either of these claims. To the embarrassment of Knutzen, his explanation of how it is possible for a monad to enter and become a part of a material body does not make his ontology of monads look better than that of Leibniz. The old annoying problem of how a simple, discrete, and unextended monad could ever add up to a composite, continuous and extended body remained unresolved. The final steps needed to solve this problem were taken by the young Kant, and they would lead him to the drastic conclusion that bodies had to consist of monads, no less physical than the bodies themselves.

2.4 Monads and Places: Kant’s Views

Kant had begun his studies at the University of Königsberg in the autumn of 1740, at the age of 16. Though it cannot be established when Kant first attended Knutzen’s lectures, his influence on Kant is revealed already in his choice of university subjects, namely philosophy and physics. From the very beginning of these studies Kant revealed a deep understanding of the importance of figuring out how and in what sense it can be said that the substances can be related in space. For the young Kant the location of the simple substances became a foundation stone for his explanation of how it is possible for there to be a world in which all simple substances are connected, in spite of their ontological independence.

Scholars have tended to disagree about the relative importance of Leibniz, Wolff, and Knutzen in shaping these views. Nikola Poppovich for instance argues that Kant’s pre-critical philosophy of

¹⁷¹ Watkins (2005, pp. 58-9).

space basically was *identical* with that of Wolff, at least until 1768.¹⁷² Poppovich's reading ignores, however, that Kant was not as agnostic as Wolff was about the nature of the harmony, which makes the simple substances connected in space. The reading defended by Benno Erdmann, according to which Kant's pre-critical works reflect Knutzen's less orthodox version of Wolffian philosophy, is more convincing.¹⁷³ On this reading, Kant grounded the places of the monads on his defence of the hypothesis of a physical influence, which Knutzen introduced to him.

Kant's preoccupation with the problem of the spatial relations of simple substances is revealed already in his first published work "Thoughts on the True Estimation of Living Forces"¹⁷⁴ (*Gedanken von der wahren Schätzung der lebendigen Kräfte*) from 1746-7. Kant's discussion of this problem is presented against the background of an account of the forces of substances. Kant thus argues that the power of the substances involves an *essential force*, i.e. a primitive active force. In *Living Forces* Kant identifies Leibniz as the progenitor of this important insight and praises him for having been the first to understand that bodies have essential forces that are *internal* to them and *prior* to their extension.¹⁷⁵ The young Kant's endorsement of Leibniz's view that we can attribute primitive active forces to the substances is heterodox however. According to Kant, the essential force of a substance is, somehow, able to alter the inner states of another substance. Kant's notion of substances endowed with active forces is, in other words, worked out in such a way that it is possible for him to subscribe to certain elements of Leibniz's notion of active force, while still defending Knutzen's notion of intersubstantial causation.

Kant's defence of Knutzen does not come without reservations however: as Martin Schönfeld points out, Kant rebukes Knutzen for having tried to ascribe *forces of motion* to all things, including both souls and bodies.¹⁷⁶ Schönfeld argues that these reservations are motivated by Knutzen's alleged *reduction* of the forces of the monads to forces of motion, but that cannot be true, for Knutzen explicitly states that the forces of monads are forces of perception *and* motion, even though they originate from one and the same source.¹⁷⁷

Unless we assume that Kant's reservations are based on an outright misunderstanding of the teachings of Knutzen, it seems more reasonable to say that Kant tries to make Knutzen's argument more convincing. When Knutzen speaks about the forces of motion and perception as indistinguishable forces, he just wants to say that monads have one force, though one which produces ontologically different effects. In part, this involves something as simple, if not even naïve, as the suggestion that Knutzen could have avoided his troubles if he just had started speaking about "essential forces", rather than "forces of motion and perception".

Kant's concerns about Knutzen's choice of terminology reveal, however, that he might have had deeper-seated worries about Knutzen's notion of force. As Andrew Carpenter has pointed out, there are at least two important objections against the notion of force as a force of motion (*vis motrix*)

¹⁷² Poppovich (1924, p. 24).

¹⁷³ Erdmann (1876, p. 143).

¹⁷⁴ Henceforth *Living Forces*.

¹⁷⁵ *Living Forces*, §§ 2-3, Ak. 1, p. 18.

¹⁷⁶ Schönfeld (2000, p. 40).

¹⁷⁷ Knutzen, *Systema causarum efficientium*, §§ 30-1. Perceptions are, Knutzen explains, representations of external things in simple beings, i.e. perceptions are states of monads, which make it possible to understand the properties of external things. Combining this uncontroversial commonplace, from Leibnizian philosophy, with Wolff's somewhat naïve contention that the properties and states of external things can be inferred from the causal effects they have on other things, leads Knutzen to the less obvious conclusion that all monads are perceivers. For if all monads are causally interacting with each other, it follows that the alterations in their states are causal effects, which tell us something about the states of the monads that cause them. Hence, the alterations in the states of monads, including the corporeal monads, are perceptions.

which Kant raises in *Living Forces*.¹⁷⁸ First, Kant argues that the notion of forces is vacuous, for if a force of motion is nothing but a cause of motion, any explanation of motion in terms of forces of motion will in the end be circular.¹⁷⁹ Secondly, Kant argues that the notion of forces as forces of motion is “metaphysically incoherent”, for a body might be in a state of rest and still possess a force, as exemplified by a ball that presses its weight upon a table.¹⁸⁰ Likewise, a body might move and still not act, as is illustrated by inert bodies, which move uniformly through space without acting. This explains why Kant reserves the term active forces for the kind of forces, which are present insofar as a substance is the *efficient cause* of an alteration, and which come to expression for instance when the velocity of a body increases or decreases, as a result of a collision with another body.¹⁸¹

However, in my opinion, there is an objection to the notion of forces of motion, other than the two discussed by Carpenter. We can link this objection to Kant’s attempt to base his argument for the theory of physical influx on something different from Knutzen’s forces of motion. For such a demonstration holds only for *localised* substances, i.e. interacting and connected substances, which means that Knutzen’s demonstration presupposes what it is supposed to prove. Kant’s conundrum is therefore to replace the forces of motion by essential forces and prove that the essential forces are able to do exactly the same job as Knutzen’s forces of perception and motion.

The trouble here is that the essential forces seem to lack any ability to act outside themselves, which is necessary if they are to make it possible for substances to interact and become localised in space. Like their twin counterpart in Leibniz’s metaphysics – the primitive active forces – the essential forces are originally not intersubstantial, but intrasubstantial:

Because all connections and relations between substances, which exist outside one another, originate from the exchanged effects which their forces exercise on each other, let us see what the truths are that can be derived from this concept of force. Either is a substance in connection and relation with the substances outside it, or it is not. Because each independent being contains the complete ground of all its determinations, it is not necessary for its existence that it is connected with other things. Substances can therefore exist and still have no external relation to any other substances whatsoever, or stand in no actual connection with them. Since no place can occur without external connections, positions and relations, it is no doubt possible for a thing to actually exist, without being anywhere [*nirgends*] in the entire world. This paradoxical statement, although it is an immediate consequence, and moreover a very simple consequence, of the most familiar truths has, so far I know, been observed by nobody before.¹⁸² (*Living Forces* §7, Ak. 1, pp. 21-2)

In themselves the substances can exist, yet exist “nowhere” in the world. Kant bases this “paradoxical” conclusion on the premise that the substances are “independent” beings, which contain the “complete ground” of all their properties. If we recall the discussion of simple substances and atoms in the previous sections, it seems as if Kant tries to say that the substances he has in mind are ontologically and causally independent things, which exist independently of each

¹⁷⁸ Carpenter (1998, pp. 38-45).

¹⁷⁹ Carpenter (1998, pp. 38-9)

¹⁸⁰ Carpenter (1998, pp. 40-5); *Living Forces*, §3, Ak. 1, p. 18.

¹⁸¹ *Living Forces*, §3, Ak. 1, p. 18.

¹⁸² My translation, J.J.

other and the world, and which contain the sufficient reason of all their properties within themselves.

However, though it is perfectly conceivable that the substances exist without interacting, it is impossible for them to exist in the same world without existing in the same space. The latter means that an interaction has to occur between their essential forces, for only thus can an *order* occur between them, which makes the substances located in a space. We can then explain the localisation of the substances as an outcome of the interaction, which occurs between their essential forces rather than their forces of motion:

It is easy to point out, that there would be no space and no extension, if the substances had no force to act outside themselves. For without this force there is no connection, without connection no order, and without order finally no space.¹⁸³ (*Living Forces* § 9, Ak. 1, p. 23)

In the absence of an interaction between the essential forces of the substances, the substances would fall apart from the world.¹⁸⁴ Those who claim that there can be only one actual world, namely our world, forget the possibility that our world only contains a subset of all substances.¹⁸⁵

The problem with Kant's argument for interacting essential forces is of course that he gives no solid argument for thinking that the substances belong to one and the same world and hence are interacting in space. Though Kant dissolves the fundament of Knutzen's demonstration of physical influx and replaces it with what he thought to be a more coherent notion of force, he provides no argument for thinking that the actions of these forces are interconnected. In this sense Watkins is perfectly right when he observes that Kant "simply presupposes" the truth of the theory of physical influx in *Living Forces*.¹⁸⁶

To be exact Kant presupposes that the substances belong to the same world. This has consequences for his attempts to show that essential forces are able to produce alterations, not only in the inner states of the substances, but also in their states of motion. For although Kant claims that "nothing is easier" than to demonstrate the motion of substances from the essential forces, one does not have to follow all the intricate details of Kant's laborious argument to see that it presupposes that the forces of the substances are "determined to act externally".¹⁸⁷

The lacuna, which is present in Kant's argument for physical influx in *Living Forces*, might explain why he attempts to present an explicit proof of the theory, eight years later in "New Elucidation" (*Nova Dilucidatio*) from 1755.¹⁸⁸ In *New Elucidation* Kant describes the simple substances (*substantiae singulae*) in the following way:

Individual substances, of which none is the cause of the existence of another, have a separate existence, that is to say, an existence which can be completely understood independently of all other substances. If, therefore, the existence of some substance or other is posited simply, there is nothing inhering in it which proves the existence of other substances distinct from itself. But since a relation is a relative determination, that is to say, a determination which cannot be understood in a being considered absolutely, it follows that a relation and its determining ground can neither of them be understood in terms of the existence of a substance, when that existence is posited in itself. (*New Elucidation*, p. 40, Ak. 1, p. 413)

¹⁸³ My translation, J.J.

¹⁸⁴ *Living Forces*, § 8, Ak. 1, p. 22.

¹⁸⁵ *Living Forces*, § 8, Ak. 1, pp. 22-3.

¹⁸⁶ Watkins (2005, p. 112).

¹⁸⁷ *Living Forces*, § 4, Ak. 1, p. 19.

¹⁸⁸ Henceforth *New Elucidation*.

As Daniel Warren observes there are two important points worth noticing in this passage.¹⁸⁹ The first point is that Kant takes the simple substances to exist independently of each other. This means, more exactly, that he considers the simple substances to have a *separate existence*, i.e. they do not cause the existence of each other.¹⁹⁰ The existence of a simple substance is, in other words, possible independently of any relation that holds or may hold between them, even if it may be true that they are the consequence of a common cause, namely God. The simple substances are, in other words, both ontologically and causally independent.

The second point is that Kant considers the possible existence of simple substances to be intelligible, even if one conceives them in isolation from each other.¹⁹¹ The properties of simple substances are perhaps beyond the reach of our intellect, but if we can know them, then it must be possible to know them from the essences of the simple substances, i.e. from the inner, essential properties that they have independently of their relations to each other.¹⁹² In the terminology prevalent in Kant's time, one would say that the simple substances are not only possible, but also knowable in themselves. The simple substances are therefore *conceptually independent*, in the sense that if we can know something about them, we can know it independently of their relations to other things.¹⁹³

In his attempt to prove that simple substances interact, in spite of their causal and ontological independence, Kant develops two arguments.¹⁹⁴ The first argument builds on an attempt to demonstrate that no alteration can occur within the simple substances *if* they are causally isolated from each other. Kant thus argues that the inner states of the simple substances are immutable unless they are endowed with forces, which make it possible for them to act upon each other. For the forces of the simple substances can only alter their inner states if they alter their modes, i.e. those contingent properties which do not have the complete grounds or sufficient reason for their existence in the essence of the simple substances. The latter means that the modes cannot appear or disappear in the substance unless it exists in an external state, i.e. unless it relates to and interacts with another substance.

In the second argument, Kant tries to show that the world, taken as a whole of simple substances, would be impossible if the substances were causally isolated from each other. Here Kant emphasises God's active part in bringing about the real connection, which is necessary in order for the substances to exist in a world. God can, if he wills, bring the simple substances into existence, and continuously preserve them, without conceiving or conceptualising them as connected and as endowed with interacting forces. However, given that the simple substances interact, as they do assuming that the first stage of Kant's proof is correct, it follows that God must conceive them as related, in the same act by which he preserves their existence:

¹⁸⁹ Warren (2001, pp. 38-44).

¹⁹⁰ Warren (2001, p. 40).

¹⁹¹ Warren (2001, p. 40).

¹⁹² Later, in the *Critique of Pure Reason*, Kant will argue that such properties, which are absolutely internal to a simple substance, cannot occur in the explanation of the inner properties of phenomena, such as the shape and impenetrability of material bodies.

¹⁹³ Warren (2001, p. 40).

¹⁹⁴ The first argument is presented in *New Elucidation*, pp. 37-40, Ak. 1, pp. 410-1. The second argument is presented in *New Elucidation*, pp. 40-5, Ak. 1, 412-6.

The schema of the divine understanding, the origin of the existences, is an enduring act [*actus perdurabilis*] (it is called preservation); and in that act, if any substances conceived [*conceptae*] by God as existing in isolation and without any relational determinations, no connection between them and no reciprocal relation would come into being. If, however, they are conceived as related in God's intelligence, their determinations would subsequently, in conformity with this idea, always relate to each other for as long as they continued to exist. That is to say, they would act and react; and the individual substances would have a certain external state. But if you abandoned this principle, no such state would exist in virtue of their existence alone. (*New Elucidation*, p. 42, Ak. 1, p. 414)

Hence, only God can conceive the simple substances as related, in spite of their ontological and causal independence, and so bring them in interaction.¹⁹⁵ In the opposite case, the agreement or harmony between the states of the simple substances would have to be pre-established by God, like the inner, perceptual states of Leibniz's monads.¹⁹⁶

The same arguments Kant presents to show that it is perfectly possible for simple substances to exist without interacting are then applied to show that there is nothing in the simple substances themselves, which determines their place in space:

Since place, position, and space are relations of substances, in virtue of which substances, by means of their reciprocal determinations, relate to other substances which are really distinct from themselves and are in this way connected together in an external connection, and since, furthermore, our demonstration has shown that the mere existence of substances does not in itself involve connection with other substances, it is obvious that, if you posit a number of substances, you do not at the same time and as a result determine place, position, and space, this last being compounded of all these relations. (*New Elucidation*, p. 42, Ak. 1, p. 414)

Kant thus seems to claim that the place of the substance cannot be determined unless it interacts with other substances, which makes the determination of the place of a simple substance conditioned by the very same enduring act or scheme, by which God brings the substances to existence and conceives them as related. For as we already have seen, Kant denies that there is anything in the substances themselves, which makes them connected with each other. It is therefore perfectly possible that God could have created a plurality of isolated substances, each one of them situated in a world of their own apart from the worlds of the other substances, exactly as Leibniz had suggested in the *New System*:

But, since the reciprocal connection of substances requires that there should be, in the effective representation of the divine intellect, a scheme conceived in terms of relations, and since this representation is entirely a matter of choice for God, and can therefore be admitted or omitted according to His pleasure, it follows that substances can exist in accordance with the law which specifies that *they are in no place* and that they stand in no relation at all in respect of the things in our universe. There could be, if God so

¹⁹⁵ *New Elucidation*, pp. 42-3, Ak. 1, pp. 414-5.

¹⁹⁶ Implicitly this means that Kant attributes to Leibniz the view that the simple substances are causally isolated and not only causally independent; c.f. *New Elucidation*, pp. 39, 42-3, Ak. 1, pp. 412, 414. Since God brings together each substance with every other substance, the interaction between them, and the bodies they are parts of, will be universal. Insofar this interaction makes them and the bodies gravitate towards each other, the gravitation will also be universal ("Newtonian attraction"), i.e. it will reach all distances.

willed, a number of such substances, free from any connection with our universe, but, nonetheless, linked with each other by means of a certain connection of their determinations so as to produce place, position, and space: they would constitute a world banished from the limits of the world, of which we are parts, that is to say, they would constitute a solitary world. For this reason, the possibility that there might be, had it so pleased God, a number of worlds, even in the metaphysical sense, is not absurd. (*New Elucidation* p. 42, Ak. 1, p. 414)

In a subsequent passage, Kant adds some details to his discussion of how simple substances become connected and localised in space. Though Kant is far from easy to follow, he seems to suggest that the interaction between simple substances is a necessary condition for their connection and localisation in space. Thus, if the substances are localised in the same space, then they are also interacting:

All substances, in so far as they are connected with each other in the same space, reciprocally interact with each other, and thus they are dependent on each other in respect of their determinations. It is, hence, possible to understand the universal action of spirits on bodies and of bodies on spirits. (*New Elucidation*, pp. 43-4, Ak. 1, p. 415)

Later, in the “Physical Monadology”¹⁹⁷ (*Monadologia Physica*) from 1756, Kant continues his investigation into the connection between the spatial properties and relations of simple substances and the interaction of their forces, outlined earlier in *New Elucidation*. *Physical Monadology* contains, in fact, a plea for a physics supporting itself on geometry, but still open to the arguments of the metaphysicians. Kant seems convinced that such a move would prove itself more useful to the dynamist programme, than Descartes’ mechanical, corpuscularian physics and metaphysics. Kant’s starting point is a theme that he left without detailed consideration in *Living Forces*, namely the question of the ultimate “parts” of the material bodies; how are they related and able to not just occupy a space but also fill it:

Metaphysics, therefore, which many say may be properly absent from physics is, in fact, its only support; it alone provides illumination. For bodies consist of parts; it is certainly of no little importance that it be clearly established of which parts, and in what way they are combined together, and whether they fill space merely by the co-presence of their primitive parts or by the reciprocal conflict of their forces. (*Physical Monadology*, p. 51, Ak. 1, p. 475)

In the absence of an answer to these questions, one could still argue that the dynamist programme is unable to explain the extension of material bodies. The latter is of course unsatisfactory, given its claim that forces are “prior” to extension. The corpuscularian philosopher could then rightly ask whether not it seems easier and more reasonable to explain the extension of bodies, by assuming that they consist of extended corpuscles.

In *Physical Monadology*, Kant starts by arguing that we have to conceive the parts of material bodies, not as corpuscles, but as simple substances. Taking away the peculiar mode of composition of a body that gives it its structure (essence) abolishes everything, except the parts. The remaining

¹⁹⁷ Henceforth, *Physical Monadology*.

parts must therefore be free from everything that is composite in the body, i.e. they must be ultimately simple substances, so called monads:

Bodies consist of parts, each of which separately has an enduring existence. Since, however, the composition of such parts is nothing but a relation, and hence a determination which in itself contingent, and which can be denied without abrogating the existence of the things having this relation, it is plain that all composition of a body can be abolished, though all the parts which were formerly combined together nonetheless continue to exist. When all composition is abolished, moreover, the parts which are left are not compound at all; and thus they are completely free from plurality of substances, and, consequently, they are simple. All bodies, whatever, therefore, consist of absolutely simple fundamental parts, that is to say, monads. (*Physical Monadology*, p. 53, Ak. 1, p. 477)

Superficially, Kant thus aligns himself with the Leibnizian camp and its warhorse – the monad. In reality there are important differences between Leibniz's concept of the monad and Kant's concept of the physical monad, for according to Kant a monad is located in space, not because it has a point of view, but because it is connected with a mathematical point, i.e. because it has a place, in a more literal sense.

The young Kant's theory of physical influx is clearly novel, in the sense that it presents a new, stronger defence of the Knutzen's thesis that the reciprocal determination of forces of the monads is a necessary condition of the places of monads. However, Kant is not easy to follow, for it must be underlined that he carefully emphasises the *phenomenal* nature of space, and presumably the locations within it, even if they are produced by the relations that hold between reciprocally determined monads. In space, there are no simple parts, like the ones we find in the material bodies:

For it is abundantly plain that space, which is entirely free from substantiality and which is the appearance of the external relations of unitary monads, will not at all be exhausted by division continued to infinity. (*Physical Monadology*, pp. 55-6, Ak. 1, 479)

Kant's view here is certainly consistent with Leibniz's famous claim that space or extension is a well-founded phenomenon. The ontological groundwork for this phenomenon is nonetheless different according to Kant's theory: the physical monads relate externally because they influence each other, not because their states harmoniously agree with each other.

The theory is, however, novel in another more profound and heterodox way, namely because it claims to present a new solution to Wolff's and Knutzen's problem of how it possible for simple substances to be parts of extended material bodies in spite of their unextended nature. The monad thus "fills space" by its repulsive force, or force of impenetrability.¹⁹⁸ The latter depends on its "external relation" to other monads:

Since there is no plurality of substances to be found in the monad, though any monad, when posited on its own, fills a space, it follows from what has been said that the ground for the filled space is not to be sought in the mere positing of a substance but in its relation with respect to the substances external to it. (*Physical Monadology*, p. 57, Ak. 1, p. 481)

¹⁹⁸ *Physical Monadology*, pp. 56, 61, Ak. 1, pp. 480, 484.

The activity of these repulsive forces makes it possible for a physical monad to resist the penetrating motion of other physical monads into the field within which they act. Since the repulsive force diminishes by the cube of the radius along which it acts, it follows that the force field of a physical monad is spherical. The physical monads are in other words, endowed with an impenetrable, orbital force field.¹⁹⁹ The expansion of this force field is not unlimited, but curbed by a Newtonian attractive force, which acts in the opposite direction of the repulsive force:

It is, therefore, necessary that there be opposed to this striving another striving which is opposed to it and which is equal to it at a given distance, and which, by occupying a space, determines its limit. But that which acts in the opposite direction to repulsion is attraction. Accordingly, in addition to the force of impenetrability, every element needs another force, that of attraction. If the force of attraction did not exist, then the bodies of nature would have no determinate nature. (*Physical Monadology*, pp. 61-2, Ak. 1, p. 484)

Since the attractive force diminishes by a slower rate than the repulsive force, namely by the square of its radius of action, there is ultimately an equilibrium between repulsive forces and another, attractive force, which determines the limits of the force field of the physical monad. Otherwise, it would be impossible for the physical monads to gather into finitely extended bodies with a definite inner structure.

The interaction between the forces of the simple substances therefore not only determines the order of their coexistence, i.e. their places, but also the extension of their force fields. The monad fills space merely by virtue of its forces of motion, which means that Kant can explain how the monad can fill a space, without taking recourse to any inner, primitive passive forces (confused perceptions). The latter explains how the monad can be present to and so occupy a determinate, infinitely divisible space, and not just a point-like place, in spite of its simplicity and lack of extension.

The main point of this conclusion, I think, is that Kant now had an explanation of how it is possible for bodies to occupy an extended place, and yet consist of ultimately simple monads. It was exactly this problem from Leibniz, which Wolff and Knutzen had tried to solve, and which Kant now thought he has solved. Thanks to the repulsive forces of the physical monads, it is possible for them to have a position in an extended body, which was one of the main objections that Des Bosses and De Volder had raised against Leibniz's idea that bodies consist of ultimately simple substances. Material bodies are no chimerical composites, as Foucher had objected, but consist of physical monads which interact, in a fashion perfectly consistent with the theory of physical influx. Human experience is impossible, unless the mind is attached to a body of causally interacting, physical monads.

2.5 Problems with Kant's Views

In order to understand what made Kant abandon his dogmatic solution to the problem of the causal interaction and spatial location of simple substances, it is necessary to consider some of the more peripheral implications of this solution. This means that we have to consider its implications for

¹⁹⁹ *Physical Monadology*, pp. 61-3, Ak. 1, pp. 484-5.

Kant's dogmatic solution of the problem of how it is possible for the soul to interact with its body. The key to the solution of this problem is, Kant argues, to consider the interaction between the soul and the body in terms of an interaction between primitive forces, not forces of motion:

For that reason it becomes so difficult in the metaphysics, to understand, how matter is in a position, to produce representation in the soul of the man in a truly active way (that is, through physical influx). What does the matter, one says, other than causing motions? That is why all its force comes down to that it, at most, moves the soul out of its place. Simply how is it possible that the force, which just produces motion, should generate representations and ideas? (...) A similar difficulty shows itself, in the question of whether the soul is in a position to set matter in motion. But both difficulties disappear and more than a little light is shed on the physical influx, if the force of matter is ascribed not to motion, but rather to its actions upon other substances that need not be defined further. For the question of whether the soul can cause motions – that is, whether it has motive force – is transformed into the question of whether its essential force is directed to act externally, that is, whether it is capable of acting outside itself on other entities and of producing changes. One can answer this question quite decisively by saying that the soul must be able to act externally by reason of the fact that it is in a specific location. For when we analyse the concept of what we call location, we find that it suggests the actions of substances upon each other. All that kept a certain acute author from making the triumph of physical influx over pre-established harmony complete was nothing more than this little confusion of concepts, a confusion that is easily overcome as soon as one's attention is brought to it.²⁰⁰ (*Living Forces* §§ 5-6, Ak. 1, pp. 20-1)

The "acute author" (*scharfsinnigen Schriftsteller*) of which Kant speaks in this passage is of course Knutzen.

Kant's arguments for the theory of physical influx are, however, partly original. Thus, in *Living Forces* Kant argues that the interaction between the soul and the body is granted by the fact that the simple substances are endowed with essential forces, i.e. primitive active forces, and not just active forces of motion. For the soul's place in the world is an outcome of its interaction with the other simple substances in the world. Thanks to the spatial situatedness of the soul, it becomes possible for the soul to act outside itself, i.e. to move the parts of its body. Reversely it also makes it possible for the forces of motions of the body to produce representations and ideas in the soul, and not just motions in other bodies:

Likewise, it is easy to understand the sort of paradoxical statement, namely how it is possible that matter – which one imagines cannot cause anything but motions – can impress certain representations and images on the soul. For the matter, which is set in motion, acts on everything, which is connected with it in space, thus also the soul, that is, it alters the inner state of the soul, insofar as it is externally related. Now, the inner state of the soul is nothing else, but the combination of all its representations and concepts, and insofar as this inner state is externally related is called *status representativi universi*. That is why the matter alters the state of the soul, by which it represents the world, through its moving force.²⁰¹ (*Living Forces* §6, Ak. 1, pp. 20-1)

The interesting and important insight Kant expresses in the passage from *Living Forces* quoted above is therefore based on the observation that the localisation of the soul is the key to the problem of the two-sided effects of the primitive essential force of the soul and a monad in general. Thus, a

²⁰⁰ This translation is an extended version of the translation that occurs in Watkins (2005, pp. 106-7).

²⁰¹ My translation, J.J.

force of the soul cannot translate into a force of motion except as a force of a localised thing. Only if the mind is localised does it become possible for the body to interact with the mind, and so bring about an alteration in its perceptual states.

The issue of the localisation of the human soul and its interaction with the body is given a more detailed treatment in *New Elucidation*. As we have seen, Kant argues that no alteration can occur within a monad unless its forces causally interact with the forces all other monads, and that God, who is perpetually present to all monads, conditions their interaction. Taken in isolation the inner forces of the monads cannot act and give existence to anything except those immutable, necessary determinations, which follow from their essence. The world then becomes an aggregate of dead, immutable monads, which is hardly a world at all, because of the absence of any real connection between the monads.

In *New Elucidation*, Kant argues that this principle applies in particular to the inner states of the human soul and that this shows that the soul must interact with things outside it, in particular its own body. Thus, in *New Elucidation* Kant not only notes that the mind has an active force and an appetite for new perceptions implanted in it, but also that this desire alone cannot bring about any alterations in its perceptions.²⁰² Hence, the alterations in the perceptual states, which we observe within ourselves, show that our soul must interact and connect itself with other things:

For the soul is subject (in virtue of the inner sense) to inner changes. Since, as we have proved, these changes cannot arise from its nature considered in isolation and as disconnected from other things, it follows that there must be a number of things present outside the soul with which it stands in reciprocal connection. It is likewise apparent from the same considerations that the change in perceptions also takes place in conformity with external motion. It follows from this that we could not have a representation, which was a representation of a body and which was capable of being determined in a variety of ways, unless there was a real thing present to hand, and unless its interaction with the soul induced in it a representation corresponding to that thing. For this reason, it can easily be inferred that the compound, which we call our body, exists. (*New Elucidation*, p. 39, Ak. 1, pp. 411-2)

The ultimate flaw of Leibniz's theory of the pre-established harmony is therefore its inability to explain the localisation and embodiment of the minds, in a way that meets the challenges of idealism. However, thanks to the proof of the principle that all succession within the monads occurs because they interact with each other Kant thinks that it is possible to reject the doctrine of the pre-established harmony:

Our proof utterly overthrows the Leibnizian pre-established harmony, not, as is generally the case, by means of final causes, which are thought to be unworthy of God and which not infrequently supply only an unreliable support, but by means of the internal impossibility of the thing itself. For it follows immediately from what we have demonstrated that, if the human soul were free from real connection with external things, the internal state of the soul would be completely devoid of changes. Our demonstration furnishes the opinion that some kind of organic body must be attributed to all spirits whatever with powerful evidence of its certainty. (*New Elucidation*, p. 39, Ak.1, p. 412)

²⁰² *New Elucidation*, p. 31, Ak. 1, p. 406.

Like all other spiritual substances, the human soul must have an organic body, in order to perceive the world, for otherwise the perceptual states of the soul could undergo no alterations. Though Kant is reluctant to present any details it is quite clear that the “real connection” Kant speaks about involves external relations, i.e. relations in space or places, for the latter are, as we have seen, the outcome of the causal interaction between the forces of simple substances. Applying the argument Kant presents in *New Elucidation*, it would then follow that the place or point from which the soul perceives the world, would become a condition under which its perceptions alter, thus making it situated not only in space, but also in time.

In addition to the fact that Kant’s arguments fail to demonstrate the principle of succession, it seems as if the arguments have other serious flaws. These flaws are not so much concerned with their inability to refute idealism, as their implications for Kant’s conception of the mind-body union. For if the teachings Kant presents in *Physical Monadology* apply to the soul, it follows that the soul must have repulsive and attractive forces, like all other monads. The soul can then perceive the world from the point of view of the place it occupies, by filling it by its repulsive force. Souls become opaque, impenetrable physical monads, which not only occupy but also fill a space in their bodies, within the sphere of activity of its repulsive force. As Schönfeld correctly observes Kant’s pre-critical notion of the physical monads makes it difficult for him to draw an exact line between “material and immaterial things”:

Nevertheless, Kant needed to draw such a line while insisting that the soul is somehow material. In the context of the pre-critical project, a soul that is not of material nature is a soul that does not belong to the world, cannot be embodied, and cannot causally interact there. (...) Thus, the inevitable consequence of the pre-critical project was that bodies and souls, or material and immaterial substances, are subject to the same laws. At the same time, the pre-critical project must not rule out the possibility of an afterlife – that is, the possibility that material substances remove themselves from their physical embodiment and interact purely among themselves. If Kant had wanted to rule this out, he would have had to embrace atheism or materialism.²⁰³

Kant’s attempt to combine physical monads with physical influxionism thus seems to make the mind into a *part* of material bodies and not something merely *present* to them. Though Kant thought that his physical monadology could answer all those questions, which had already been raised against both monads and the theory of physical influx, it had an unwelcome side-effect, namely that the mind no longer has the same place as its body, but rather a place in its body.

Human experience was not a mystic vision of all things in God, as Malebranche had intimated, but an experience from a point of view. However, this point of view was not the place of the body, but a peculiar and absurd point of view *in* the body, similar to the point of view of a little homunculus in the brain. It was these absurd and partly materialistic implications, which were brought to Kant’s attention in the early 1760s, and which he had to address in a series of revisions of his physical monadology, revisions, which finally led him to the transcendental turn. These issues are the topic of the next chapter.

²⁰³ Schönfeld (2000, p. 244).

3. Crisis and Reorientation: Kant and the Sensibility of the Soul

The previous chapter dealt with Kant's attempt to show how it is possible for the mind to be a simple immaterial substance and yet have a place, which gives it a point of view in the outer, material world. The trouble with the ontology of physical monads is that it seems to make all simple substances, including human souls, into material things endowed with forces, which make it possible for them to occupy and fill a place in space. In other words, the ontology of physical monads cannot grant the immateriality of the human souls. To avoid this conclusion Kant attempted to show that the human soul is present to the physical monads of its body, in spite of its inability to act upon them by any forces of attraction or impenetrability. Like Leibniz before him, Kant started to play with the idea that the immaterial soul is present to its body not locally, but virtually.

The *first section* of this chapter introduces the shift in the focus of Kant's metaphysical investigations in the 1760s, from the metaphysics of monads and bodies to the metaphysics of the human, thinking soul. What Kant came to realise is that the scope of the conceptual analysis of metaphysics is limited. The properties of the physical monads, like their impenetrability for instance, cannot be demonstrated as an outcome of an analysis of the concept of physical monads. In the absence of such a method, it could not really be said that it had been demonstrated that physical monads are endowed with forces of repulsion. Even more importantly, it was brought to Kant's attention that the same was true also of the immateriality of the human, thinking soul; Kant's predecessors had not successfully demonstrated that the mind is a spiritual substance.

The *second section* enters the main theme, which was introduced in the previous chapter, namely Kant's attempt to conceive the mind-body union in a way which is consistent with the theory of physical influx. Kant's revision of his earlier ontology of physical monads in the early 1760s marks an important step towards such a conception. The soul is an immaterial, spiritual monad, not a physical monad, and has no other place than the place of its body, which is the point from which it views the world. The soul acts upon its body, and it acts upon the body because it perceives it, not because it fills some place within the body, for instance in the brain tissue. The soul is present to its body, virtually, not locally, which entails that the monadic elements of the body cannot influence the soul by its forces of repulsion and attraction, much in agreement with what Swedenborg had argued.

The *third section* therefore deals with Kant's discussion of Swedenborg and his theory of spiritual influx, in the mid-1760s. Typical of this theory is that it describes the relation between the soul and its body as asymmetric: the human soul can act upon the body, but not the other way around. One of the spectacular implications of Swedenborg's theory is that it might be possible for the sensibility of the soul to have sensations, without being affected by the body. Kant's attempts to restore the immateriality of the soul seem to thus have implications, which are inconsistent with the theory of physical influx and the realistic notion of material world as a composite of physical monads.

The *fourth and fifth sections* outline how Kant tries to come to terms with these difficulties, in the end of the 1760s. The focus of these sections lies on Kant's investigation into the soul's passive faculty of representation, i.e. the sensibility of the soul and his attempt to delimit it from understanding. In the end of the 1760s Kant's attention shifts from the problem of the soul-body union to the problem of how sensibility is capable of being acted upon by the forces of its body, so as to produce sensations. The sensations do not immediately refer to an outer object, however, which means that sensations must be directed and coordinated to an object. From this, Kant concludes that sensibility is more than just a faculty of sense, namely a faculty of intuition. Possibly

inspired by Lambert's distinction between the matter and the form of knowledge Kant singles out space as the form of sensibility, which makes it possible for the sensations to become representations, for it is only in space that sensations can be directed to an object.

3.1 Kant and the Immateriality of the Human Soul

Kant's presentation of his habilitation thesis 1756 was followed by a period of relative calm, mainly characterised by practical concerns related to his activity first as a private university lecturer (1755-1765), and then later as a librarian (1765-1770). The beginning of the 1760s signalled, however, a dramatic upheaval in Kant's way of thinking, as Schönfeld shows in his colourful account of this stage in Kant's life.²⁰⁴ Paradoxically the reason for this upheaval may be found in the rather dull and eventless circumstances that framed Kant's outer life. For in working out his lectures Kant certainly had to think over the vast array of topics that were presented in the works he lectured on. For instance, in the systematic textbook on metaphysics by Baumgarten, he had to consider not only ontology and cosmology, but also the metaphysics of the mind and God, and in the "Introduction to the Doctrine of Reason" (*Einleitung in die Vernunftlehre*), by the Wolffian Georg Friedrich Meier, he was confronted with the problems of logic and the theory of knowledge. The results of these labours were recorded in a number of original and thought provoking books on the metaphysics of the mind and God, in which Kant challenged not only the views of Wolff and Leibniz, but also his own earlier beliefs.

More specifically Kant's works were concerned with the problem of showing how it is possible for the mind to be at once a spiritual substance and still interact with things which are material, most importantly its own body. To see how Kant's dilemma might help us to understand the setting of his investigation into the nature of the human soul, during the 1760s, we have to consider his writings in some closer detail. The writing which stands out as most important here is Kant's "Inquiry concerning the distinctness of the principles of natural theology and morality" (*Untersuchung über die Deutlichkeit der Grundsätze der natürlichen Theologie und der Moral*), a prize essay written in the autumn of 1762 and published 1764.

The fascinating about this essay is that it illustrates how Kant starts to deal with themes such as the question of the origin, validity, and boundaries of the concepts and principles of metaphysics, themes which later return during the critical period. Metaphysics must proceed in accordance with a method of its own, which cannot be reduced to, or mimic, the synthetic method adopted in geometry, which we are familiar with from the *Physical Monadology*.²⁰⁵ Typical of geometry is that its concepts arise out of the constructions which define them. For instance, the concept of a triangle is not given to geometry but defined by the construction of a three-sided figure. The essential elements of the triangle construction, namely the three sides, also serve as a ground or argument (*Beweisgrund*) for everything that can be demonstrated about a triangle, like the sum of its angles, etc.

Geometrical constructions serve as arguments, not only for theorems about curves, figures etc., but also for general propositions about the properties of space. Thus, though geometry does not bother about the concept of space, it can still say something about it, thanks to the possibility of potentially infinite, iterative constructions.²⁰⁶ For instance, in order to demonstrate the infinite

²⁰⁴ Schönfeld (2000, pp. 183-244).

²⁰⁵ *Inquiry*, pp. 248-9, Ak. 2, pp. 276-7.

²⁰⁶ *Inquiry*, pp. 251-2, Ak. 2, pp. 279-80.

divisibility of space one has to construct two indefinitely extended parallel lines and then cut them by a line at right angles.²⁰⁷ From a given point, on one of the parallel lines, it is then possible to draw indefinitely many intersecting lines through the other two lines. Hence, it follows that space is infinitely divisible, etc.

Metaphysics, on the other hand, proceeds from “confused” (*verworren*) concepts, which are given to our understanding prior to any definitions.²⁰⁸ Definitions are rare and must be prepared by giving careful attention to the primary marks (*Merkmale*) of the concept, in abstraction (*abgesondert*) from other concepts.²⁰⁹ These primary marks present our understanding with “data” (*Data*) to indemonstrable propositions or principles, which serve as arguments for subsequent demonstrations, which may lead to definitions.²¹⁰ However, the analysis is often partial and therefore incomplete, which means that it cannot lead to a definition. The concept of space for instance is only open to a partial analysis (*Auflösung*).²¹¹

However, the true problem of definitions in metaphysics is not so much the incompleteness of its analyses as the data on which they are based. In geometry, the same construction which defines a concept also shows that it expresses a real possibility “outside” thought, but in metaphysics there are no such guarantees. The mere analysis of a concept may present us to the marks, which are essential to a concept, but from this it does not follow that they are also essential marks of a real possibility. That a mark is formally possible just goes to show that it is logically possible, in the sense that it is consistent with the principle of contradiction, but from this it does not follow that it is inseparable from the possible existence of a property, or a thing. In *Inquiry* Kant underlines this, by making a distinction between “formal principles” and “material principles”.²¹² Roughly, this corresponds to the distinction between “logical grounds” and “material grounds”, which appears in “The only possible argument in support of a demonstration of the existence of God” (*Der einzig mögliche Beweisgrund zu einer Demonstration des Daseins Gottes*), written the same autumn as the *Inquiry*.²¹³

In *The Only possible argument*, Kant underlines that the marks of real possibilities (“material elements”) are originally given, only as the marks of something which exists or as the consequence of something which exists.²¹⁴ Contrary to Wolff or Baumgarten, Kant thinks that the inner possibility of a thing (*ens*) is material and not just formal. The triangle for instance is formally possible as long as the three sides agree and hence do not violate the principle of contradiction.²¹⁵ However, the triangle will of course not be possible apart from its three sides, which are the material

²⁰⁷ *Inquiry*, p. 251, Ak. 2, p. 279; cf. *Physical Monadology*, pp. 54-5, Ak. 2, pp. 478-9. In the *Physical Monadology* Kant describes the perpendicular line as a “physical line”, i.e. as the diameter of a force field. From the possibility of drawing indefinitely many intersecting lines through one of the parallels, Kant concluded to the infinite divisibility of the force field and hence physical space.

²⁰⁸ *Inquiry*, p. 256, Ak. 2, p. 283.

²⁰⁹ *Inquiry*, pp. 248-9, Ak. 2, p. 276.

²¹⁰ *Inquiry*, pp. 253, Ak. 2, p. 281.

²¹¹ *Inquiry*, pp. 252, Ak. 2, p. 280.

²¹² *Inquiry*, pp. 268, Ak. 2, pp. 294-5.

²¹³ *The only possible argument*, pp. 124-5, Ak. 2, pp. 79-80.

²¹⁴ *Ibid.*

²¹⁵ Without an agreement the three sides cannot form a closed figure on the plane. However, in this case the agreement Kant has in mind is not so much the agreement of the sides within the triangle as their agreement within the definition of the triangle.

principles of its possibility.²¹⁶ They are given as data, presumably as a presupposition of the very same construction that defines the triangle.

Unfortunately, this observation does not sit perfectly well with Kant's rigid distinction between the synthetic and analytic methods, defended in the *Inquiry*. For instance, in the *Inquiry* Kant argues that the three-dimensionality of space follows from a mere analysis of the concept of space. However, it is evident that the datum Kant refers to must be taken from "space itself" (*den Raum selber*), which is hardly possible without an additional appeal to a geometric construction.²¹⁷

The same unfortunate problem also slips into the analysis of the concept of body. Kant ensures his readers that an analysis of this concept makes it evident that bodies are impenetrable, substantial composites of simple things (physical monads), etc.²¹⁸ However, whereas the impenetrability is given as a datum to the sense of touch, there is no datum, which goes to prove that bodies are substantial composites. From this point of view, Kant is in no better position than he was in the *Physical Monadology*, where he seems to have just assumed that it belongs to the real possibility of a body that it has to be a composite of simple elements.

Here rational psychology has an advantage, according to Kant, for the concept of the rational soul or spirit is not given, but stipulated, like the concepts of geometry.²¹⁹ However, from this we do not know that rational souls (spirits) are possible. Even if souls are simple substances and hence different from *matter*, which is composite, there is nothing, which seems to exclude that they nonetheless are *material*. Thus, given the notion of simple substances as physical monads, it is not impossible (contradictory) to conceive the soul as an "element of matter", endowed with a passive force of impenetrability:

I admit that the proof we have in our possession for establishing that the soul is not matter is a good one. But take care that you do not infer from this that the soul is not of a material nature [*materialer Natur*]. For this latter claim is universally taken to mean not merely that the soul is not matter, but also that it is not a simple substance of the kind which could be an element of matter. But this requires a separate proof – the proof namely, that this thinking being does not exist in space in the way in which [*nicht so wie*] a corporeal element exists in space, that is to say, in virtue of impenetrability; it also requires proof that this thinking being could not, when combined with other thinking beings, constitute something extended a conglomerate. But no proof has actually been given yet of these things. Such a proof, were it to be discovered, would indicate the incomprehensibility of the way in which a spirit is present in space. (*Inquiry*, pp. 266-7, Ak. 2, p. 293)

Here it seems as if Kant finally adumbrated the problem of how it is possible to ascribe a point of view to an immaterial mind. To prove that the mind is immaterial it is insufficient to show that the mind is simple and not composite, as its body. Rather, it has to be demonstrated that the mind has

²¹⁶ Kant illustrates the same point by taking the example of a rectangular triangle. The triangle and the right angle are the material elements of the rectangular triangle and their agreement, in accordance with the principle of contradiction the formal element of the triangle. See, *The only possible argument*, pp. 122-3, Ak. 2, pp. 77-8.

²¹⁷ *Inquiry*, p. 254, Ak. 2, p. 281. Later in the *Critique of Pure Reason* (B 41) and in *Prolegomena*, Ak. 4, p. 284, Kant repeats Ptolemy's famous "proof" of the three-dimensionality of space, which is based on the observation that for any given point it is impossible to construct more than three lines which cut it at right angles.

²¹⁸ *Inquiry*, pp. 259-60, Ak. 2, pp. 286-7.

²¹⁹ *Inquiry*, p. 249, Ak. 2, p. 277.

a point of view and therefore a place, which it does not fill by virtue of any force of impenetrability, something Kant assumed was impossible.

3.2 The Rational Soul and its Place: Kant's Views in "Metaphysik Herder"

Kant's efforts to come to terms with the immateriality of the thinking soul are visible also in *Metaphysik Herder*, i.e. in the lecture notes taken by his favourite student Johann Gottfried von Herder (1744-1803), from the summer semester 1762, to the summer semester 1764. In *Metaphysik Herder* Kant repeats many of the basic teachings of the physical monadology: physical monads are not extended, but occupy space, by virtue of the interplay between their repulsive and attractive forces.²²⁰ Repulsive forces are expansive, attractive forces cohesive.²²¹ Repulsion is always repulsion of another physical monad, so the filling of space of physical monads presupposes that they are mutually compresent. Relations within space are therefore mutual.²²² From this it follows that God cannot be in space; there is no space between God and that which he has created, for in that case it would have to be possible for that which is in space to act on God, i.e. God would have to be passive and dependent, which he is not.²²³

Taken apart from the simple substances, which make space possible, space just consists of accidents. In Kant's terminology, space is a *totum ideale*, a whole, which consists of accidents.²²⁴ Hence, there is nothing in space in and for itself, which supports it:

Space does not consist of simple parts. (That does not mean that it is infinitely divisible.) In every space is a straight line possible – next to any one is a perpendicular line possible. Parallels which do not consist of simple parts, in that is not a subject of composition, because that which, etc., of that remains nothing when all composition is taken away; because that which remains would have to be simple. That which does not have an inner subject of composition must be something whose essence is pure composition. Space has no first subject of composition = no space is in and for itself possible if no simple substances were given, because composition as an accident without substance [is] not possible.²²⁵ (*Nachträge Herder*, Ak. 28, pp. 848-9)

More novel is Kant's distinction between physical monads and souls, which he had left without consideration in the *Physical Monadology*. One of Kant's guiding ideas here is Wolff's familiar doctrine that the forces of the material and immaterial substances cannot be of the same kind. Thus, Wolff typically describes the human, rational soul as a self-conscious being, which has a *thought*, inasmuch as it *apperceives* its perception of the thing.²²⁶ That the rational soul is a thinking thing also grants that it is an immaterial simple thing, for a composite material thing cannot think.²²⁷ However, the force of the soul is different from the inner forces of the physical unities, according

²²⁰ *Metaphysik Herder*, Ak. 28, pp. 30-1, 46.

²²¹ *Metaphysik Herder*, Ak. 28, p. 46.

²²² *Nachträge Herder*, Ak. 28, p. 848.

²²³ *Nachträge Herder*, Ak. 28, p. 848.

²²⁴ *Nachträge Herder*, Ak. 28, p. 847.

²²⁵ My translation, J.J.

²²⁶ Wolff, *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 194.

²²⁷ Wolff, *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 742.

to Wolff, for none of these forces make it possible for the physical unities to perceive anything outside them, not even indistinctly as Leibniz thought.²²⁸

Kant outlines the difference between the human soul and the physical monads in a similar fashion. According to Kant, only souls have a faculty and power of representation.²²⁹ Whereas the faculty of representation is the possibility of the soul to represent something different from itself, the force is that which is sufficient for it to actualise this possibility.²³⁰ The force that is sufficient to actualise a representation is furthermore either entirely within the soul or partly outside the soul. In the latter case, the force corresponds to a passive faculty of the soul; in the former case, the force corresponds to an active faculty. The faculty of representation is consequently both passive and active. Kant hence distinguishes between two faculties of representation: *sensibility* and *understanding*.²³¹

The sensibility of the soul includes the sense, which can be divided into two faculties: *outer sense* and an *inner sense*.²³² Outer sense gives sensations, i.e. representations, which have their ground in the presence of an object (*Sache*).²³³ However, not everything in the sensations can be referred outside ourselves, namely the feeling of pleasure or pain, which accompanies them.²³⁴ Later, in the 1770s, Kant marks this by making a distinction between outer sense, and the feeling of pleasure and pain, the internal sense (*sensu interior*).²³⁵ Internal sense should also not be confused with the inner sense, for the inner sense does not make us sense and feel, but it make us aware of our feelings and sensations.²³⁶

²²⁸ Wolff's realism with respect to material bodies thus goes hand in hand with a more dualistic model of the mind-body union; cf. Erdmann (1877, p. 63).

²²⁹ Kant is not entirely unambiguous on this issue, however, as will be seen below.

²³⁰ *Metaphysik Herder*, Ak. 28, pp. 24-8; *Nachträge Herder*, Ak. 28, pp. 844-7.

²³¹ *Nachträge Herder*, Ak. 28, pp. 850-7; 869-74. Herder's lecture notes do not, to my knowledge, explicitly say anything about the understanding as an active faculty and power. Kant underlines, however, that the understanding is an original faculty (*Grundvermögen*) in its own right, which is different from the receptive, sensible faculty. Moreover, Kant describes repeatedly the understanding or intellect as the active faculty, both in the *Reflexionen zur Anthropologie*, Ak. 15 pp. 77-91, as well as in the later lecture notes, e.g. *Metaphysik Mrongovius*, Ak. 29, p. 888.

²³² *Nachträge Herder*, Ak. 28, p. 850. This can be compared with Baumgarten's distinction between inner sense and outer sense, discussed in *Metaphysica*, §§ 534-5, which is based on the difference between the two kinds of objects represented by these senses, namely states of my mind (*animae meae*) and states of my body (*corporis mei*).

²³³ *Nachträge Herder* Ak. 28, pp. 850. What Kant means by "object" or "presence" is not altogether clear, but the lecture notes suggest that Kant takes sensations to be the result of the soul's presence to itself, as well as the effect of actions on the soul by material bodies; see Ak. 28, pp. 850, 890. The notion of sensation presented by Kant in *Metaphysik Herder* is more consonant with some sort of direct realism, than the notion presented in the *Critique of Pure Reason* (A19-22/B33-4), where Kant speaks of "objects" (*Gegenstände*), rather than things, and where he takes the objects of sensations (*empirische Anschauungen*) to be appearances.

²³⁴ Pleasures and pains rather refer to ourselves, namely to the agreement or disagreement which a sensation produces with respect to our consciousness of ourselves and sensibility (*Empfindsamkeit*), as Kant explains in one of his 1760s notes on Baumgarten's *Metaphysica*; see *Reflexionen zur Anthropologie*, Nr. 651, Ak. 15, p. 288.

²³⁵ See for instance *Reflexionen zur Anthropologie* Nr. 605, Ak. 15, p. 260.

²³⁶ See *Reflexionen zur Anthropologie*, Ak. 15, Nr. 208, p. 80. This leaves it open if inner sense is identical with self-awareness or apperception, and it is not until the late 1760s, that we find a more clear cut distinction between the inner sense and the apperception; see *Reflexionen zur Anthropologie*, Ak. 15, Nr. 208, p. 80. Thus, whereas the inner sensation is an awareness of myself insofar as I am affected, the apperception involves an awareness of myself as spontaneously active. Inner sense understood as apperception makes it possible for us to apprehend objects as distinct from ourselves, and hence reflect on their characteristic marks. Inner sense is therefore connected with understanding. Already in *Nachträge*

The important lesson from Herder's lecture notes, which is relevant for our purposes, is that Kant describes sensibility (sense) as passive, because it is unable to represent an object spontaneously by its own force alone. Sensibility is in other words passive, not because it resists the tendency of the intellect to make perceptions more clear and distinct, as Leibniz thought, but because it cannot represent without being causally affected by its body. In this context, Kant recognises that not only sense and reproductive imagination, but also thinking, depend on the causal actions of the body:

- Quaestio: does the soul need a body for rational thinking? Responsio: 1) it needs the body [*ihn*], since sensations are effects of the body on the soul, which are grounds of the thoughts. Thus the same motions of the body appear to be necessary as causes in order to reproduce the same effect – the thoughts – at least partially. Likewise the body must act in the soul as previously [*damals*] for instance [in order to] to reproduce tones (of which one has no concept without the body), and the soul must excite the same motions in the brain as formerly.²³⁷ (*Metaphysik Herder*, Ak. 28, p. 106)

The sensibility of the soul shows that the soul has a passive force, which is entirely different from the passive forces of the physical monads.²³⁸ It must therefore be assumed that the soul's presence to the body does *not* depend on having a force of impenetrability, like the physical monads or material elements. The absence of forces of impenetrability in the soul leads, however, to two dilemmas, which Kant presents in the following way to his students:

– If it [the soul] is not present in space through its force of impenetrability, then the bodily elements can also be where the soul is. – If the bodily elements can be immediately present everywhere in space, then why cannot the soul also be everywhere in space and in fact immediately in the *entire* body?²³⁹ (*Metaphysik Herder*, Ak. 28, p. 146)

In the solution to these dilemmas, Kant suggests that the bodily elements are present to each other, only insofar as the spheres of activity of their passive forces *touch* and exert *pressure* on each other. Material elements are, therefore, only externally present to other material elements, for a material element can only be touched by an element which itself has a force of repulsion. The soul's presence to the bodily elements is therefore only internal, i.e. it is present to them only in the sense that it is immediately aware of them. The soul cannot be localised in the body, but thanks to its presence to the material elements the soul becomes localised in the same place as the place where the body is:

The place of the soul in the universe is the place of the body, and in the body the soul has no place. The soul is most intimately [*innigst*] present to the bodily elements, for the bodies are only externally present to each other. The soul is thus not acting upon the surface [of the body] but upon the inner forces [of its elements]. The soul can hence act upon the inside of the body, but the body cannot act upon the soul. The soul cognises the inner state of each element and acts upon every inner state, and in this way it is present

Herder, Ak. 28, p. 869 Kant seem to have suggested that there would be no understanding, no concepts and no judgments, without inner sense and therefore also consciousness.

²³⁷ My translation, J.J.

²³⁸ *Metaphysik Herder*, Ak. 28, p. 144.

²³⁹ My translation, J.J.

to the body. The bodily elements act externally upon each other, by powers of repulsion etc. etc., that is, outer relations.²⁴⁰ (*Metaphysik Herder*, Ak. 28, p. 146)

Kant's solution to the dilemmas, presented in the lectures, thus involves the claim that the soul is virtually and not locally present to the bodily elements. If this is true, it follows that the presence of the thinking soul to its body is not physical (by contact). This presupposes that the bodily elements, i.e. the physical monads, must have an inner, essential force, in addition to the forces of repulsion and forces of attraction. Thus, the elementary parts of the living body, which is joined to the thinking soul, start to look less like physical monads and more like the monads of Leibniz, in the sense that they must have some force which makes it possible for them to perceive or feel both pains and pleasures. The soul's inner sensations, which include an awareness of the inner states of the elements of the living body, i.e., their states of pain or pleasure, also explain how it is possible for the soul to be present to its body. The pains and pleasures of the elementary parts of the body are hence not suffered and enjoyed by the soul, until it feels them.

Kant also argues that these inner states are influenced or acted upon by the soul's awareness of them, but leaves very few details of the exact workings of this influence; the nature and laws according to which the forces of the soul act is a puzzle, according to Kant.²⁴¹ Even if sensations are caused by the body, the soul cannot be influenced by the forces of repulsion and attraction of the body. For the elements of the body cannot act upon something, except locally, i.e. insofar they touch it or attract it at a distance. The only way the physical monads could influence the soul by their forces of repulsion and attraction, would be if the soul is material and thus seated in the body.

The immateriality of the soul cannot be demonstrated but proves to be consistent with the fact that our sensations involve something more than just inner sensations, namely sensations of the outer states of the bodily elements. Typical of these *outer sensations* is that they can refer to some place outside the brain, to the states of the bodily organs or to the places of objects, which are located outside us. The latter insight disproves the attempts of certain materialists to show that the soul is seated in the body, for in that case the places of our sensations would be inside our heads and not outside them:

Posited that the soul [*sie*] had its place, for instance in the brain, all other [places] would be mediated, for instance through nerve fibres. The place of the sensation must then be the place where straight lines, e.g. the nerves, encounter. If I would sense along an oblique line, for instance a pain in the hand, or sounds coming from behind, then the soul would have to refer them along a straight line, hence to the wrong place, or it would have to refer everything to the brain, in the place where the soul is present.²⁴² As it is we refer the pain to the organ; for instance that the finger pains is hardly something I refer to the brain, etc. These illustrations probably tell that the soul has no place in the body. Its presence is just a *sphaera activitatis*,

²⁴⁰ My translation, J.J.

²⁴¹ *Metaphysik Herder*, Ak. 28, pp. 146-7.

²⁴² Though Herder gives few details, it seems as if Kant thinks of this situation as analogous with the case described by Newton in his optics, in which an object sends rays of light, which are reflected through a looking-glass. In the looking-glass the rays will change direction and move into the spectator's eye, from the point of view of which the object will appear in a place, before the eye, where the rays of light converge. Kant's curious reference to the oblique line would then be the counter part to the reflected/refracted ray of light in Newton's example. For a more detailed discussion of Newton's example, with references, see Grier (2001, pp. 37-8).

like the gravitation of the bodily elements. It is in all places of the body, without being extended.²⁴³ (*Metaphysik Herder*, Ak. 28, p. 147)

Kant's idea here seems to be that a material soul will be located in a place in the brain, where the nerve fibres encounter. Instead of feeling a pain in the finger, or hearing a sound from behind, the pain/sound will be felt/heard in the point of convergence of the nerve fibres, in the brain, where the soul is located. This absurd implication makes it improbable that the mind fills a space, for instance in the brain, with a repulsive force. That the pain is referred to the finger does not prove that the mind is immaterial, but it is certainly evidence in favour of this thesis. The mind has no other point of view than the place of its body, which is perfectly consistent with what we can expect if the mind is immaterial.

This insight does not dispel the difficulty of explaining what it is that makes these bodily organs and the brain connected with the sensations in the first place. The revised notion of physical monads, which match the immaterial soul, and allow it to act upon its body, does not allow the body to act and make an impression on the rational, immaterial soul. Kant does not allow the forces of the rational soul to be determined or modified by the forces of the body, as his version of Knutzen's theory of physical influx would predict. The monadic elements of the body cannot act upon the soul, since they cannot cognise the states of the soul in the same way as the soul cognises the states of the monadic elements of the body.

To summarise, the insight that the soul has no other point of view than the body, made it highly probable that the soul is immaterial, something Kant did not consider or mention in the *Inquiry*. However, from this insight, it was a huge step to explain how the soul causally interacts with its body. Curiously, Kant's revision of his earlier notion of physical monads seems to open up the possibility that the soul might have extrasensory experiences, independently of the body, not completely unlike the experiences of mystics, or even spirit-seers. To see how Kant handled this problem, and how it moved him forward to a study of the human sensibility, we have to turn to his encounter with Swedenborg.

3.3 The Spirituality of the Rational Soul: Kant's Encounter with Swedenborg

Kant's efforts to come to terms with the forces of the human rational soul and its connection with the body are further developed in "Dreams of a spirit-seer"²⁴⁴ (*Träume eines Geistersehers erläutert durch Träume der Metaphysik*), from 1766. In *Dreams* Kant reiterates the definition of certain "modern philosophers", presumably Leibniz and others, according to which a spiritual being is a simple being endowed with reason, like the human soul.²⁴⁵ The simplicity of the spiritual being grants that it is not extended, but from this it does not follow that it is immaterial, as the Leibnizians had argued. For neither reason nor simplicity excludes that such beings are capable of filling entire volumes of space, which in turn would make it impossible to distinguish them from material bodies. To show this Kant invites the reader to make the following thought experiment:

²⁴³ My translation, J.J.

²⁴⁴ Henceforth *Dreams*.

²⁴⁵ *Dreams*, p. 308, Ak. 2, p. 320; on the Leibnizian connotations of Kant's definition, see Carpenter (1998, p. 164).

I now proceed to raise the following question: suppose that I wished to place this simple substance in a cubic foot of space which is full of matter: would it be necessary for a simple element of that matter to vacate its place so that the spirit could occupy it? Do you think that the question must be answered affirmatively? Very well! In that case, the space in question, if it were to admit a second spirit, would have to lose a second elementary particle. And if one were to continue this process, the cubic foot of space would eventually be filled with spirits. And this cluster of spirits would offer resistance by means of impenetrability in exactly the same fashion as if the cubic foot of space were full of matter. (*Dreams*, p. 309, Ak. 2, p. 321)

Kant's conclusion from his thought experiment is thus that spirits would become parts of entire clusters of spirits, offering resistance to whatever might intrude into its space. Hence, in spite of their power of thinking, spirits would be "indistinguishable from the elements of matter", i.e. they would become material, to use the terminology from the *Inquiry*.²⁴⁶

Though Kant acknowledges his inclination towards the notion of human souls as spiritual substances, he also confesses that this view makes it difficult to understand how a spiritual substance can be united with a body.²⁴⁷ Thus, how is it possible for a spiritual being to be present in the same place as the body and be acted upon by the body, in spite of the fact that it is penetrable and exerts no passive forces of repulsion? That the soul is a simple thinking substance is not an issue here, according to Kant; the issue is rather to demonstrate that it is possible for such a substance to be present to a space without filling it. Negatively stated, spiritual substances must lack all passive forces of repulsion, but positively stated, they must have a force which makes them present in space, but without filling it:

Now, suppose that I posited the existence of substances which were of a different kind: they are present in space but they possess forces which differ from the *motive force* of which the effect is impenetrability. If I supposed that such substances existed, it would be altogether impossible for me to think of them *in concreto* as displaying activity, unless it bore analogy with my empirical representations. And, in so far as I have denied them the property of *filling* the space in which they operate, I would have deprived myself of a concept by means of which the things which present themselves to my senses are otherwise thinkable for me; and the inevitable result must, therefore, be a kind of unthinkability. But this cannot be regarded as a known impossibility for the simple reason that the opposite will, in respect of its possibility, likewise remain incomprehensible, even though its actuality presents itself to the senses. (*Dreams*, pp. 310-1, Ak. 2, p. 323)

Once again, Kant repeats his conclusion from *Inquiry*, namely, that it is impossible to demonstrate the possibility of an immaterial soul which does not fill a space. On the other hand, we cannot disprove the possibility of an immaterial soul either; it is even probable that there are immaterial souls, as Kant seemed to have argued, according to Herder's lecture notes. To make it conceivable how such spiritual substances, which do not fill a space, still might be connected with material bodies, we have to rely on shaky *analogies*. For instance, we can think of human souls as being endowed with a sphere of activity, analogous with the sphere of activity of the repulsive force of a physical monad ("simple element of bodies"). However, unlike the sphere of activity of a physical monad it would have to be possible for material bodies to penetrate into it.²⁴⁸ Paradoxically

²⁴⁶ *Dreams*, p. 309, Ak. 2, p. 322.

²⁴⁷ *Dreams*, pp. 314-5, Ak. 2, p. 327.

²⁴⁸ *Dreams*, p. 311, Ak. 2, p. 323.

a spiritual substance cannot fill a place, but we must still think of it as occupying or “taking up” (*Einnehmen*) a place, by virtue of the sphere of its activity.²⁴⁹

But where in the body is the soul localised?²⁵⁰ The answer given by Kant is simply: nowhere. I just am where my body is. For short, my place is the place of my *feelings*:

Where is *your* place (that of the soul) in the body? then I should expect there was a catch in the question. For it is easy to see that the question already presupposes something with which we are not acquainted through experience, though it may perhaps be based on imaginary inferences. The question presupposes, namely, that my thinking ‘I’ is in a place which is distinct from the places of the other parts of that body which belongs to my self. But no one is immediately conscious of a particular place in his body; one is only immediately conscious of the space which one occupies relatively to the world around. I would therefore rely on ordinary experience and say, for the time being: Where I feel, it is there that I *am*. (*Dreams*, p. 312, Ak. 2, p. 324)

The human soul is thus in the “*whole body*”²⁵¹ and “*wholly in each of its parts*.”²⁵² There is no particular place in the body, reserved for the spiritual substance, as distinct from the place of the heart, kidney, lung, etc.

Though Kant openly confesses that his reason for accepting the existence of immaterial natures remains “obscure”, he does not think that it is completely unsound.²⁵³ In the simple elements of living bodies, there are not just material natures, i.e. forces of repulsion and attraction, but an inner principle of activity, which animates them and makes them joined to a soul. Kant confesses that he cannot specify in what these inner life activities consists.²⁵⁴ However, in a footnote (quoted below), he suggests that even material parts are capable of perception, most likely feelings of pains and pleasure. This suggests that even the material elements are endowed with forces of perception. Kant’s position here seems to be that animal behaviour is easier to explain, if we think of animals as beings with a soul.²⁵⁵

The outcome of this metaphysical line of argument, familiar from *Metaphysik Herder*, is that the human soul can move and generally influence its body, but only if its awareness of the inner states of the elementary parts of the body affects their inner forces of perception. Leibniz’s thesis that the elements of the bodies (monads) are capable of perception is not as easy to refute as one might think, for even if the elementary parts of the bodies have faculty of representation, it does not follow that the bodies themselves are capable of representations:

Leibniz said that this inner ground of all its external relations and their changes was a *power of representation*. This thought, which was not developed by Leibniz, was greeted with laughter by later philosophers. They would, however, have been better advised to have first considered the question of

²⁴⁹ *Dreams*, p. 311, Ak. 2, p. 323.

²⁵⁰ *Dreams*, p. 312, Ak. 2, p. 324.

²⁵¹ *Dreams*, p. 313, Ak. 2, p. 325.

²⁵² *Dreams*, p. 313, Ak. 2, p. 325.

²⁵³ *Dreams*, p. 315, Ak. 2, p. 327, footnote.

²⁵⁴ *Dreams*, p. 315, Ak. 2, pp. 327-8.

²⁵⁵ Kant also reckons that these spiritual substances could influence each other. The spiritual substances could then coexist in an ordered fashion, without necessarily having to coexist outside one another, that is, independently of the order under which the coexistence of the material bodies in the outer world is possible. The human mind might thus be influenced, in a way, which gives it a place in the world of spirits.

whether a substance, such as a simple part of matter, would be possible in the complete absence of any inner state. And, if they had, perhaps, been unwilling to rule out such an inner state, then it would have been incumbent on them to invent some other possible inner state as an alternative to that of representations and the activity dependent on representations. Anybody can see for himself that if a faculty of obscure representations is attributed even to the simple, elementary particles of matter, it does not follow that matter itself has a faculty of representation, for many substances of this kind, connected together into a whole, can after all never constitute a unified thinking entity. (*Dreams*, p. 315, footnote, Ak. 2, p. 328)

The soul feels the pains and pleasures of the bodily elements of the living body, but they do not become painful or pleasant representations until the soul refers them somewhere, inside or outside the bodily organs, as we have seen in Herder's lecture notes. In *Dreams* Kant explains the directedness of the sensations, in terms of the directions of the *impressions*, which the objects make on our sense organs; objects are seen or heard, not just because their impressions on the senses are "heightened", but because they are directed.²⁵⁶

However, Kant's discussion of the orientation of the impressions does not explain how it is possible for a material body or a physical monad to act on the senses in such way that a sensation is given to the soul in the first place. Kant intimates that, for instance, sounds can make impressions, which he somewhat vaguely associates with the so called material ideas (brain patterns) which accompany and copy them.²⁵⁷ However, like Leibniz and Wolff, Kant denies that the sensations of the soul can be caused by these material ideas.²⁵⁸

Furthermore, in his discussion of impressions (*Eindrücke*) in his 1760s notes on Baumgarten's *Metaphysica*, Kant suggests that the impressions are identical with bodily feelings of pleasure and pain, rather than impressions on sense organs (brain patterns).²⁵⁹ Bodily feelings of pleasure and pain are, however, acted upon by the soul, not given to it, according to the views presented in Herder's lecture notes. Kant's explanation of sensation is therefore incomplete in the sense that it fails to give an account of the bodily causes of the impressions/sensations and their directions.

Kant's predicament here seems to be that he is caught up in a conflict between opposing tendencies and requirements. On one hand, philosophy has to live up to the standards of mathematics and physics, which require that the unity between the thinking soul and the body is explained, purely in terms of an interaction between forces, capable of producing measureable and visible motions. On the other hand, an explanation of such kind seems to undermine and contradict the proudest findings of rationalist psychology, namely that man has a thinking soul which is immaterial and endowed with a power (or powers) capable of nothing but perceptions and desires, although in such fashion as to make it connected with a body.

Though Kant is very cautious about not jumping into conclusions, he seems convinced that the life sciences provide a solution to the contradiction between physics and rational psychology. Though Kant pays respect to biologists like Herman Boerhaave (1668-1738) and his mechanist explanations of life, he seems convinced that there must be some immaterial principle or force in

²⁵⁶ *Dreams*, p. 331, Ak. 2, p. 344.

²⁵⁷ *Dreams*, p. 332, Ak. 2, p. 345.

²⁵⁸ More specifically the places of the material ideas in the brain cannot explain how it comes that the object of sensation is viewed at a point or place outside me. The cerebral pattern that accompanies my sensation of a pencil for instance is located within my brain, no less than the cerebral pattern that accompanies the pencil I am inventing in my imagination. Nonetheless my soul discriminates between the brain patterns, by localising the seen pencil in a "focus imaginarius" outside me and the imagined pencil in a "focus imaginarius" within me.

²⁵⁹ See for instance *Reflexionen zur Anthropologie*, Nr. 268, Ak. 15, p. 102.

living bodies as well. In support of this thesis, Kant makes references to the vitalist biologist Georg Ernst Stahl (1660-1734) and his idea that the soul adds a certain “vital force” (*vis vitalis*) to the organic body.²⁶⁰ The trouble with this position is not only that the biology of the 1800th century was in its bud, but also that it upsets the elegant symmetries typical of the mechanist explanations of the interaction between the soul and the body.

Kant’s conclusions here can be viewed against the background of his discussion of Emanuel Swedenborg (1688-1772) and his notion of spiritual substance. On my reading, the purpose of Kant’s book on Swedenborg is not simply to warn the readers of the mystic and spiritualistic implications of the airy-fairy speculations of dogmatic, rationalist metaphysics. Contrary to the opinions of commentators like Désiré Nolen, Ernst Cassirer, Kuno Fischer, and Martin Schönfeld for instance, Kant’s discussion of the mystic experiences of Swedenborg does not testify to his rupture with the metaphysics of Leibniz and his transition to Humean scepticism.²⁶¹

Like Kant, Swedenborg typically argues that the soul is a spiritual substance, which cannot be affected by anything material. For instance, in “On the Intercourse between the Soul and the Body” (*De Commercio Animae et Corporis*), from 1765, Swedenborg explains that it is easier for souls to “flow” into the senses and bodies, than for bodies to flow into the soul,

for the soul is a spiritual substance, and is consequently purer, prior, and interior, but the body is material, and is consequently grosser, posterior, and exterior; and it is according to order for the purer to flow-in into the grosser the prior into the posterior, and the interior into the exterior, thus the spiritual into the material, and not *vice versa*: consequently it is according to order for the thinking mind to flow-in into the sight according to the state induced on the eyes from objects presented, which state that mind also disposes at its pleasure; and like-wise for the perceptive mind to flow-in into the hearing according to the state induced on the ears by speech. (Swedenborg, *On the Intercourse between the Soul and the Body*, p. 5)

The purity, priority and internality of the spiritual substance therefore makes the relation between the body and the mind asymmetric, in the sense that it is possible for the mind to influence the body, but impossible for the body to influence the mind.

What is embarrassing here is that Kant’s own account of the unity of the soul and the body seems to end up in something quite similar to Swedenborg’s imaginary account of the human soul being engaged in an intercourse with the body. Like Swedenborg Kant denies that the soul can be influenced by the body; the body has a life together with the soul, but this life is asymmetric, in the sense that it is possible for the soul to influence the body, but not the other way around. Not only does this open up the possibility of extra-sensorial perceptions and previsions, but also inter-spiritual communication (speaking with the souls of the dead, etc.). Was it not true that Swedenborg had perceived a fire in Stockholm, while his body and his eyes were situated far away, in Gothenburg? Kant’s investigations into Swedenborg’s clairvoyant experiences are therefore a part of his investigations into the question of how the human soul is connected with the body.

²⁶⁰ *Dreams*, pp. 318-9, Ak. 2, p. 331.

²⁶¹ Nolen (1875, p. 150), Schönfeld (2000, pp. 234-44). Kuno Fischer’s and Ernst Cassirer’s interpretations are discussed by Carpenter (1998, pp. 150-1). Paulsen (1875, p. 100) makes, unsurprisingly, a more cautious evaluation of Kant’s philosophical position in *Dreams*: “Kant is an empiricist, he just doesn’t properly know it himself.”

The true target of Kant's irony is not Swedenborg, but rather himself in his potential role as a spiritualist.²⁶² For if the mind is a spiritual substance, as Kant envisages in *Metaphysik Herder*, it follows that the human mind is beyond the causal influence of any bodily forces, exactly as Swedenborg claims. The needle, which punctures my finger, is not the cause of my pain, but an occasion for my feeling of pain. Given that this is true, one encounters the possibility that the mind can have sensations independently of its body and the bodily sense organs. The possible existence of a rational soul seems, in other words, to undermine Kant's realistic notion of the world as a world of physical monads and material bodies.

The possibility that the human soul exists and acts independently of the body and the outer world, in accordance with the occasionalist doctrine of Malebranche, cannot be dismissed outright.²⁶³ In this respect, Kant is in no better position than Swedenborg is. The latter explains also, I think, why Kant's interest in Swedenborg's spiritism should be taken as a part of a serious investigation into the nature of the human soul and the workings of its sensibility. Let us consider these investigations in closer detail and follow their implications for Kant's notion of space and the reality of space.

3.4 Kant's Encounter with Lambert

To see how Kant's investigation evolved in the last half of the 1760s, i.e. after the publication of *Dreams*, it is helpful to concentrate on his notes on Baumgarten's *Metaphysica* and Meier's *Auszug aus der Vernunftlehre*, a text-book which faithfully summarised the basic ideas of Wolff's logic.²⁶⁴ In his notes, Kant once again returns to the question of the sensibility of the soul. Removed are all previous doubts about sensibility as a passive and receptive faculty. Sensibility produces no sensations unless it is affected by the states of its body. Only the understanding makes it possible for the soul to represent an object spontaneously without having to be affected by it.²⁶⁵ The rational soul is united with the body, not because the soul influences the body, in agreement with the theory of spiritual influx, but because they causally interact with each other.

One important factor, which might have enforced and shaped this attitude, was not only Kant's heritage from Knutzen, but also his rising interest for Locke, whom he later would describe as a physical influxionist.²⁶⁶ I will not discuss Locke in any closer detail in this section, but Locke needs to be mentioned in order to understand Kant's approach to the sensible faculty of the soul.²⁶⁷ Locke had suggested that all sensations or "simple ideas of sensation", which were present to the mind, had to be produced by an object external to the mind and its power of perception, i.e. the understanding.

Though Locke hardly offered any alternatives that could settle the German debate over the theory of physical influx and the spirituality of the human mind, he suggested something which proved very important for German philosophy in general and Kant's philosophy in particular, namely that

²⁶² For a discussion of Kant's critique of Swedenborg as a self-critique, see Schönfeld (2000, pp. 241-4).

²⁶³ Though Malebranche would reject the part of Swedenborg's theory of spiritual influx, which says that it is possible for the soul to influence the body, he would certainly agree that it is impossible for the body to influence the soul.

²⁶⁴ *Reflexionen zur Anthropologie*, Ak. 15; *Reflexionen zur Logik* Ak. 16; *Reflexionen zur Metaphysik* Ak. 17-18.

²⁶⁵ Kant's marginal notes to Baumgarten's *Metaphysica* at the beginning of the 1760s and later makes it clear that this was Kant's view; see for instance *Reflexionen zur Anthropologie*, Nr. 202, Ak. 15, p. 78.

²⁶⁶ *Reflexionen zur Metaphysik*, Nr. 4275, Ak. 17, p. 492.

²⁶⁷ Locke's theory of ideas, perceptions and space will be discussed at some length in Chapter 4, section 2.

the *matter* (“material”) of all knowledge originated from the senses.²⁶⁸ This does not mean that the Germans suddenly turned into empiricists and forgot everything that Leibniz and Wolff had taught them, but it put the finger on a previously neglected philosophical question, namely the question of the distinction between the matter and form of our knowledge. Already Leibniz had hinted at this distinction in the manuscript to his “New Essays” (*Nouveaux Essais*), an extensive commentary on Locke which, however, was unknown to the German audience until 1765 when it was published for the first time, thanks to an astute librarian, Rudolf Erich Raspe.

In a passage of *New Essays* Leibniz had seemingly confirmed that Locke was right. Ideas were the matter of our knowledge and could not be reduced to immediate objects of thought (“forms of thought”), for they were objects, which also expressed the forms of things:

I agree about that, provided that you add that an idea is an immediate inner object, and that this object expresses the nature or qualities of things. If the idea were the *form* of thought, it would come into and go out of existence with the actual thoughts which correspond to it, but since it is the *object* of thought it can exist before and after the thoughts. (*New Essays*, p. 109)

However, on other occasions, such as for instance in the *Discours de métaphysique*, Leibniz had insisted that an idea could express the form of a thing only as a permanent quality or form of thought.²⁶⁹ The question of the relation between the form and matter of knowledge remained unsettled. Most likely, Kant’s own attitude to this anciently rooted dilemma was stimulated by his correspondence with the famous philosopher, mathematician and astronomer Karl Heinrich Lambert.

Lambert, who was a member of the Berlin Academy of the Sciences, had criticised Wolff for his attempt to treat all concepts as complex concepts, i.e. concepts which could be defined.²⁷⁰ Instead, Lambert revived Locke’s notion of simple ideas (“concepts”), by arguing that all human knowledge originated from the combination of certain simple concepts, which could not be defined.²⁷¹ In a letter to Kant, dated 13 November 1765, Lambert had emphasised the “similarity” in their “ways of thinking” and pointed out that there was a strong parallelism in their philosophical and scientific interests and projects. The letter was partly inspired by a misunderstanding: Lambert had mistakenly got the belief that Kant was going to publish a seminal work on the “proper method of metaphysics”,²⁷² and now he was curious about whether his own forthcoming book on metaphysics would turn out to be consistent with the method Kant advised.²⁷³

Lambert generously declared that he had no doubts about the correctness of Kant’s method, except that his own “architectonics” would be a little bit more contentious than the standard text-book on metaphysics:

(...) I maintain that a complete system of metaphysics must include more than has previously been thought. I take “architectonic” to include all that is *simple* and *primary* and in every part of human cognition, not only the *principia* which are grounds derived from the *form*, but also the *axiomata*, which must be derived

²⁶⁸ *An Essay Concerning Human Understanding* II, i, 1.

²⁶⁹ Leibniz’s notion of ideas will be more closely considered in Chapter 4, Section 3.

²⁷⁰ Lambert, *Anlage zur Architectonic* (1), § 14, p. 12.

²⁷¹ *Anlage zur Architectonic* (1), § 9, pp. 7-8.

²⁷² Kant, *Correspondence*, p. 77, Ak. 10. p. 51.

²⁷³ Lambert’s *Anlage zur Architectonic*, was not going to be published until 1771, although Lambert had completed the manuscript already in 1764.

from the *matter* of knowledge and actually only appear in simple concepts, thinkable in themselves and without self-contradiction, and also the *postulata* which state the universal and necessary possibilities of composition and connection of simple concepts. (*Correspondence*, pp. 77-8, Ak. 10, pp. 51-2)

In a brief and rather empty reply to Lambert, written New Year's Eve 1765, Kant confirmed that he indeed was working on a book on the "proper method of metaphysics", but that the publication of the book was postponed.²⁷⁴

Kant's short answer did not discourage Lambert however and in a letter, dated 3 February 1766, he added some further details to his first letter.²⁷⁵ The simple concepts, which provided the understanding with the *matter* of all its operations, had to be distinguished from the *logical form*, which presumably included or entailed certain logical principles, such as the principle of contradiction.²⁷⁶ Based on this distinction, Lambert also suggested that the knowledge of things could be separated from the knowledge of what was possible, i.e. thinkable or conceivable merely from the matter of the knowledge, i.e. alone from the simple concepts, which were singular concepts that could be found only by "direct intuition" (*directen Anschauen*).²⁷⁷ The knowledge of the latter possibilities could be stated in indemonstrable propositions, propositions that included *axioms* such as the proposition "space has only three dimensions", etc., as well as *postulates*, which together with the principles showed how the simple concepts could be combined into complex concepts.

To understand the novelty of Lambert's seemingly innocuous suggestions, it must be noted that Wolff had drawn a sharp line between intuitive, historical knowledge of facts and philosophical knowledge of the reasons under which these facts were possible. Wolff had not denied that facts could be derived from other facts, and that the knowledge of these facts was immediate, intuitive, and indemonstrable. However, Wolff had reserved the term "axiom" for immediate, indemonstrable theoretical propositions, in which the agreement or disagreement between the subjects and the predicates was evident merely from the definitions of the subject concepts.²⁷⁸ For instance, the three-dimensionality of space was an axiom only if the three-dimensionality of space was included in the definition of the concept of space, which ruled out that the concept of space could be described as a simple concept, in the way Lambert suggested.

Lambert's heterodox way of redrawing the demarcation line between intuitive historical knowledge and philosophical knowledge was not merely a matter of terminology but pointed to a deeper seated disagreement between Lambert and Wolff on the concept of space, the nature of axioms and the metaphysical and ontological concepts in general. Space is absolute and not relational as Wolff thought, for the concept of space is not a relational concept but a simple, singular concept derived from intuition.²⁷⁹ Euclidean geometry therefore starts with the line, the angle etc., which contrary to the impression, are simple concepts.²⁸⁰ Instead of dissolving complex concepts

²⁷⁴ To Johann Heinrich Lambert. December 31, 1765, *Correspondence*, pp. 81-83, Ak. 10, pp. 54-57.

²⁷⁵ From Johann Heinrich Lambert, February 3, 1766, *Correspondence*, p. 85, Ak. 10, pp. 64-5.

²⁷⁶ *Correspondence*, p. 85, Ak. 10, pp. 64-5; cf. Lambert, *Anlage zur Architectonic* (1), *Vorrede*, pp. xvi-xxiii.

²⁷⁷ *Correspondence*, p. 86, Ak. 10, p. 65.

²⁷⁸ See Wolff, *Philosophia Rationalis sive Logica*, § 267 and § 262 respectively. De Risi (2015, pp. 11-12) correctly points out that Lambert was one of few mathematicians who questioned the general belief that axioms should be derived from definitions, rather than the other way around.

²⁷⁹ *Anlage zur Architectonic* (1), § 11, pp. 10-12.

²⁸⁰ *Correspondence*, pp. 87, Ak. 10, p. 66. Lambert's position seems to be that Euclid's definitions, such as definition 1 (the point), 2 (the line) and 8 (the plane angle) are axioms, rather than definitions in the proper sense of the term.

into simpler ones, the “Leibnizian analysis” of relational concepts only leads to concepts that are successively more and more complex.²⁸¹

In order to set things straight metaphysics has to take guidance from Euclidean geometry. Thus, what Lambert suggests is that ontology should start with the simple concept of solidity, which is a singular concept derived from intuition.²⁸² This went against Wolff’s claim that the basic ontological concept is the concept of a thing in general. It is a concept which is more complex than all other concepts of things, according to Lambert, for it is a universal and generic concept which contains the basis of the division and subdivision of all things.²⁸³ Relational concepts are not the starting-point, but the end-product of both metaphysics and geometry.

Though Lambert received no answer from Kant until 1770 it was soon to become evident that he would develop Lambert’s suggestions in a different direction, by arguing that the concept of space is the concept of a form of sensibility, which cannot be derived from sensible intuitions.²⁸⁴ In a letter to his friend Moses Mendelssohn (1729-1786), written a couple of months after the letter from Lambert, Kant connects his investigation of sensibility with his earlier efforts to understand the mind-body union:

In my opinion, everything depends on our seeking out data for the problem, *how is the soul present in the world, both in material and in non-material things*. In other words, we need to investigate the nature of that power of external agency in a substance of this kind, and the nature of that *receptivity* or capacity of being affected, of which the union of a soul with a human body is only a special case. (*Correspondence*, p. 91, Ak. 10, p. 71)

In the letter Kant, resignedly, concludes that we cannot solve this problem except in terms of hypotheses which in the worst scenario are indistinguishable from mere daydreams, like those of Swedenborg. There are no data, neither in thought nor in sensation, which are sufficient to solve the problem. However, this conclusion is hardly Kant’s last word on the issue, for if we have data to know something about the form of sensible knowledge, then we also have data sufficient to investigate at least the form of sensibility.²⁸⁵

²⁸¹ *Correspondence*, pp. 85-6, Ak. 10, p. 65. In *Anlage zur Architectonic* (1), §§ 7-8, pp. 4-7, Lambert underlines that Leibnizian analysis can produce different results if applied to non-relational concepts, although it remains highly unclear how.

²⁸² Lambert, *Anlage zur Architectonic* (1), § 57, pp. 48-9.

²⁸³ “For genera and species contain the fundamenta divisionum et subdivisionum within them and, just for that reason, are more highly complex the more abstract and universal they are. The concept of ‘thing’, *ens*, is of all concepts the most complex.” See, *Correspondence*, pp. 85-6, Ak. 10, p. 65.

²⁸⁴ To my knowledge Lambert does not use the term “sensible intuition”; to intuit is to apprehend. However, in order to apprehend a simple idea, for instance the simple idea of solidity or extension, sensation is needed, which makes the sensation sensible. In *Neues Organon*, § 578, Lambert even seems to identify intuitions with sensations, at least when it comes to intuitions of things in nature.

²⁸⁵ In *Reflexionen zur Anthropologie*, Nr. 639, Ak. 15, p. 276, which Adickes dates to 1769, Kant explains that he takes the sensible form of our knowledge (*sinnliche Form einer Erkenntnis*) as synonymous with the form of sensibility (*Form der Sinnlichkeit*).

3.5 Absolute Space and the Matter and Form of Sensibility

Kant's first published report from his investigation of sensibility, after the publication of *Dreams*, is presented in "Concerning the Ultimate Ground of the Differentiation of Directions in Space"²⁸⁶ (*Von dem Ersten Grunde des Unterschiedes der Gegenden im Raume*) from 1768. In this essay, Kant adds further details to his previous discussions of the directedness of our sensations. In *Dreams* Kant had argued that the impressions on our bodily sense organs (eyes, ears, etc.) are oriented to the objects that cause them. The direction of the impressions, which the visible objects make upon our sight for instance, is indicated by the direction of the rays of light ("lines") sent out from them. Like the spectator in Newton's optics, the soul will orient these rays of light in their backward direction to the point where they converge – the "optical point" (*Sehepunkt*) or *focus imaginarius*. Thus, the point of convergence indicates the place where the object is located, without which we would be unable to see it at all.²⁸⁷

In *Directions* Kant shifts his focus from the physiology and psychology of sensation, to the deeper-seated question of what makes the impressions oriented in the first place. The easiest answer seems to be that impressions are oriented because they originate from an object, which must be located on one side or the other of my body. The objects of my sensations are therefore situated either *below* or *above* me, to the *left* or to the *right*, *before* or *behind* me. I hear the sound of the bee *behind* my head; I see the computer screen *in front* of my eyes, etc. However, this answer is not perfectly satisfactory to Kant, for it does not indicate the first ground (*ersten Grund*) of the distinction between different directions (*Gegenden*), between below and above, between left and right, etc.

In whatever the first ground consists, it must be the ground of a qualitative difference, for the left/right, up/down, etc., are different not just because they are outside one another. The right hand for instance is different from my left hand, not just because it can be seen outside the left hand, but because its rightness feels different from the leftness of the left hand. The right hand is felt as stronger, more useful and convenient, etc.

More recently, David Walford has argued that the "subjectivist" distinction between right and left can be extended to the other directions as well. For instance, the distinction before/behind is associated with the polarity between a feeling of security and a feeling of vulnerability and insecurity, etc.²⁸⁸ However, Walford also points out that although the distinction between the opposite directions is subjectively grounded in polarly opposed feelings, it does not also follow that oppositely directed sides of my body are (entirely) subjectively grounded, according to Kant.²⁸⁹

For instance, I can distinguish the front of my body from the back because of differences and asymmetries in their anatomy. The front side is the side with the face and the back side is literally the side of the back, etc. However, though these distinctions are practically important, they do not identify the first ground of the distinction between the opposite directions of the sides of the body, which is the real topic of *Directions*.

To find the first ground of the distinction between the opposite directions we have to conceive direction abstractly, apart from the polarly opposed determinations (left/right, up/down, etc.). This will leave us with direction (*Gegend*) in "the most abstract sense of the term", as Walford

²⁸⁶ Henceforth *Directions*.

²⁸⁷ *Dreams*, pp. 331-2, Ak. 2, p. 344.

²⁸⁸ Walford (2001, pp. 429-31).

²⁸⁹ Thus Walford (2001, pp. 430-1) suggests that directions (*Gegenden*) are grounded in the polarly opposed feelings, but that an object cannot have either of these directions unless it has a direction (*Gegend*), which makes it related to absolute space.

observes.²⁹⁰ However, contrary to what one can expect this does not present us to an abstract situational relation (“directedness”), but with a relation between a particular object and three-dimensional absolute space.²⁹¹ The direction (*Gegend*) of the human body is therefore a relation to three-dimensional absolute space:

I do not know exactly to what extent the object which I propose examining here is related to what the great *Leibniz* had in mind. But to judge by the meaning of the term, what I am seeking to determine philosophically here is the ultimate ground of the possibility of that of which *Leibniz* was intending to determine the magnitudes mathematically. For the positions [*Lagen*] of the parts of space in reference to each other presuppose the direction [*Gegend*] in which they are ordered in such a relation. In the most abstract sense of the term [*im abgezogensten Verstande*], direction [*Gegend*] does not consist in the reference of one thing in space to another – that is really the concept of position – but in the relation of the system of these positions to the absolute space of the universe. (*Directions*, p. 365, Ak. 2, p. 377)

The relation to three-dimensional absolute space makes it possible to conceive the body as intersected by three planes at right angles. Thanks to this, we can conceive our body as standing on a horizontal plane, which first grounds the possibility of making a distinction between the upside and the downside of the body.²⁹² Letting the remaining vertical planes divide the body into two symmetric halves and two asymmetric halves, grounds the possibility of making a distinction between left/right and fore/hind respectively.²⁹³ Without the distinction between the three planes and their two sides, which originate from the three dimensions of absolute space, no distinction between up/down, left/right, before/behind could be made, according to Kant, even if my faculty of feeling such differences is otherwise intact.

Kant notes that there is no sensation (or direct intuition as Lambert would put it) of absolute space, which proves its existence.²⁹⁴ However, he suggests that we can demonstrate the existence of absolute space by showing that we need to refer to absolute space in order to explain the phenomenon of incongruent counterparts.²⁹⁵ To this end, he invites the readers to imagine two hands, one left hand and one right hand. Both hands are equal in size and similar with respect to their shape and the inner situational order between their parts, from which it should follow that they are congruent, according to Leibniz’s concept of congruency.²⁹⁶ However, contrary to what Leibniz’s concept of congruency predicts, they are still different with respect to their orientation, which goes to show that an *inner difference* remains between them, which cannot be explained in terms of their relations to each other, but only by reference to their different relations to absolute space.²⁹⁷ Hence, absolute space exists.²⁹⁸

On the surface it seems as if Kant presents a defence of Newton’s and Clarke’s theory of absolute space, according to which space is the “sensorium of God”, and originates from his presence to all

²⁹⁰ Walford (2001, pp. 423-4).

²⁹¹ Walford (2001, p. 424).

²⁹² *Directions*, pp. 366-7, Ak. 2, p. 379.

²⁹³ *Directions*, pp. 366-7, Ak. 2, p. 379.

²⁹⁴ *Directions*, p. 371, Ak. 2, p. 383.

²⁹⁵ *Directions*, p. 370, Ak. 2, p. 382.

²⁹⁶ Leibniz’s concept of congruency, and Kant’s critique of it will be discussed in some closer detail, in Chapter 4.

²⁹⁷ *Directions*, pp. 370-1, Ak. 2, p. 382.

²⁹⁸ For a critical discussion of this conclusion, the reader is referred to van Cleve/Frederick (1991).

created things, most notably the corpuscles in the material universe. However, as will be seen, this reading of *Directions* seems inconsistent with Kant's claim that God cannot have any spatial properties and that space cannot be a substance endowed with forces, like God. Space is absolute, not because it is a property of God, but because it cannot be reduced to an order between coexisting things, since it is the condition under which an ordering of them is possible.

Kant had started to question his earlier view that the coexistence and interaction of the simple substances is a condition for their localisation already in the 1760s, as is apparent in his notes on Baumgarten's *Metaphysica*. In one note, which Adickes dates between 1764 and 1768, Kant for instance plays with the idea that space might be a condition of the possibility of their interaction:

Either space contains the ground of the possibility of the coexistence [*compraesentz*] and relatedness of many substances, or these contain the ground of the possibility of space.²⁹⁹ (*Reflexionen zur Metaphysik*, Nr. 3790, Ak. 17, p. 293)

This intimates a revision of the earlier view that simple substances are related to each other *prior* to their localisation in space. Even more importantly, Kant's revision of the order of dependence between the possibility of space and the possibility of coexisting substances signals the upcoming re-evaluation of his earlier view that simple substances are physical monads located in space. In a note, which Adickes dates to almost the same time as the previous note (1764-1768), Kant explains that space and time should be considered as the primary relations (*die ersten Beziehungen*), under which all things are connected in the world.³⁰⁰

Kant's claim that directions are felt dimensions gives an important key to his thinking about space as a form of sensibility in the late 1760s. Feelings of strength/weakness (right/left) do not just belong to the internal sense, but help us to judge the directions of our sensations, directions that make them into sensible representations (intuitions) oriented outside ourselves. In Kant's terminology, the sensations are only the *matter* of our knowledge. The knowledge of the body is conditioned by a ground or *form*, which is peculiar to the sensible knowledge, but which cannot be reduced to the formal elements that Kant had discussed in *The only possible argument* and in the *Inquiry*.³⁰¹ Somewhat cryptically, Kant explains that the form is "given" to sensibility through an "activity of the soul":

Sensation is the first element of our knowledge. So are the representations called, in cases when the mind is considered as solely passive, while it is affected by the presence of an object [*Sache*]. They [i.e. the sensations J.J.] are, as it were, the matter [*Materie*] of all our knowledge. For the form is given [*gegeben*] afterwards, through the activity of the soul. This sensation, insofar as it only intimates [*andeutet*] the state of the subject, is called feeling, but does it refer (is it in relation [*Verheltnis*]) to an outer object, it is called appearance [*Erscheinung*].³⁰² (*Reflexionen zur Anthropologie* Nr. 619, Ak. 15, p. 268)

In this context, Kant criticises Leibniz for having failed to distinguish properly between sensations and thoughts and for having suggested that *all* sensations are immediate representations of objects:

²⁹⁹ My translation, J.J.

³⁰⁰ *Reflexionen zur Metaphysik*, Nr. 3806, Ak. 17, p. 298.

³⁰¹ Kant uses the term "knowledge" without specifying whether it refers to sensible knowledge alone, or whether it applies to all kinds of knowledge; if the latter is true it gives support to the thesis that Kant turned into a "critical empiricist" during the 1760s.

³⁰² My translation, J.J. Adickes dates this note to 1769.

Leibniz takes all sensations of certain objects to be representations of them. The sensation has indeed to be the condition of the external representation, alone because those beings, which by their representations cannot be the cause of the object [of the representation], have first to be affected in a certain way by it, in order that its presence can be known, but sensation is not the external representation itself.³⁰³ (*Reflexionen zur Anthropologie* Nr. 695, Ak. 15, pp. 308-9)

Kant's remark is hardly interesting because of its accuracy, since it completely ignores that for Leibniz the perceptions of the impressions made on our organic bodies by external bodies, become "sensations" (*sentiments*) of these latter objects only if they are sufficiently distinguished, which is possible only if the perceiving monad is an animal or human soul.³⁰⁴ The interesting aspect of Kant's note is that it illustrates his attempt to draw a line between sensations and representations. The sensations are thus not immediately ready-made representations of outer objects, as Lambert had argued, but are more or less identical with our feelings of pain and pleasure. Hence, the sensations become outer sensations/representations or *appearances*, only insofar as they relate to an object:

The first faculty of the human soul and the condition for all the other is the sense [*Sinn*], through which the soul receives [*empfängt*] representations not from itself, but as effects of the presence of the thing. The representation of sensibility [*Sinnes*] as something which belongs to the state of the subject is called sensation, but as something which is related to an object [*Gegenstand*], appearance.³⁰⁵ (*Reflexionen zur Anthropologie*, Nr. 620, Ak. 15, p. 268)

Though Kant speaks about the sense as a faculty, which receives representations, it must be kept in mind that even if sensations and appearances are given to sensibility, sensibility cannot be entirely inactive. Sensibility is a passive power, not because it does not act (there is no thing such as a completely passive power), but because it cannot produce sensations and representations out of itself, unless it is modified by some power outside it which presumably belongs to its body. On the basis of the path-breaking distinction between sensations and appearances, Kant suggests that sensibility must involve something more than just sense, namely a *faculty of intuition*:

Sensible representations are either sensations and require sense, or appearances and are founded on the faculty of intuition. The former are alterations in the state of the subject, through the presence of the object [*Gegenstände*]; the latter: representations of the object [*Gegenstandes*] itself, so far the senses are subjected [*ausgesetzt*] to it.³⁰⁶ (*Reflexionen zur Anthropologie*, Nr. 650, Ak. 15, p. 287)

In the end of the 1760s Kant also adds further details to his account of the form of sensible knowledge, and in what it sense it depends on an "activity of the soul", i.e. an activity of the faculty of intuition, which Kant later would ascribe to the imagination.³⁰⁷ This activity involves the ordering or *coordination* of the sensations and their directions. Directions are, however, determinations of

³⁰³ My translation, J.J.

³⁰⁴ Leibniz, *The Monadology*, §19, G VI 610, AG 215.

³⁰⁵ My translation, J.J.

³⁰⁶ My translation, J.J.

³⁰⁷ It is this way that Kant tries to capture by describing the faculty of intuition as a formative power, which he then successively came to identify with the faculty of imagination. See Mathias Wunsch (2011, pp. 76-90) for an excellent overview of the role played by the faculty of intuition in Kant's thinking in the 1760s.

space, which suggests that space *prefigures* as a ground or form of the coordination necessary in order to have an image of a determinate geometric space, like a triangle. Kant marks this out by pointing out that space is a form of sensibility, which conditions the images of figures and other definite spaces:

Because sensibility has a determinate form in our representation, a synthesis is required for it, not just a collection. This synthesis is a connection [*Verknüpfung*] of coordination and not subsumption or subordination, such that the reason carries out. The ground of all coordination, hence the form of sensibility [*Form der Sinnlichkeit*], is space and time. The representation of an object according to relations in space is the figure [*Gestalt*] and its reproduction the image.³⁰⁸ (*Reflexionen zur Anthropologie* Nr. 683, Ak. 15, p. 304)

To me it seems as if the passage quoted above is helpful to understand what Kant means when he says that the form of sensations is “given afterwards”,³⁰⁹ by an activity of the soul. Kant does not mean that space is imposed on the sensations; the sensations are on the contrary given in space and endowed with a direction. The impression made on our bodily sense organs is thus not only felt as hurtful or pleasant, but also felt with an orientation. It is this orientation, which makes it possible for sensibility, in its capacity as a faculty of intuition, to direct the feeling to a determinate object outside the body, or direct it to the body and the “state” (*Zustand*) of the bodily organs, in which the pain or pleasure is felt.³¹⁰

For instance, painful coldness is not just felt with an orientation, but as oriented in the direction of my hand and the air surrounding my hand, etc., and this makes the feeling of coldness into an intuition of the hand or the air, which is a representation of the faculty of intuition. Space is not itself a product of coordination, but it is the ground or condition, which makes any coordination possible. In Kant’s terminology, the *form of the appearances* “depends” on space and time.³¹¹ The only form, which is a product of coordination (“given afterwards”), is the shape (*Gestalt*), without which it would be impossible to have a conscious empirical intuition of a determinate object, in other words an image of an object.

Without consciousness, it will be impossible for the faculty of intuition to produce empirical intuitions, which are *clear* and *distinct*. The clearness of the intuitions depends of course on the *intensity* or “strength” (*Stärke*) of the sensations, but this is not sufficient in order to make them *distinct* as well.³¹² The intuition of a tree for instance is clear if I can distinguish the tree from other trees, but it is still indistinct, if it does not make me conscious of its parts, its stem, its branches etc., and how they belong together. In a note, which Adickes dates to the years between 1769 and 1770, Kant explains that the indistinctness originates from a disordered representation, which makes it *confused*:

³⁰⁸ My translation, J.J. Adickes dates this note to either 1769 or 1769-1770.

³⁰⁹ *Reflexionen zur Anthropologie* Nr. 619, Ak. 15, p. 268.

³¹⁰ See for instance *Reflexionen zur Anthropologie*, Nr. 267 Ak. 15, p. 101.

³¹¹ *Reflexionen zur Metaphysik*, Nr. 3957, Ak. 17, p. 365.

³¹² See *Reflexionen zur Logik*, Nr. 2377, 2383 in Ak. 16, pp. 337-8. The attention which depends on strong impressions is involuntary according to Kant, and should not be confused with the voluntary attention involved in the act by which an appearance is brought under concepts. This view is in line with Baumgarten’s psychology of attention, which Kant seems to have defended at least in some of the earlier lecture notes, *Metaphysik Herder*, Ak. 28, pp. 850, 869. According to Baumgarten, the sensation is clearer the stronger the impression is. Moreover, we involuntarily attend to that which is clearly sensed; see *Metaphysica*, § 537 and § 529.

The confusion is actually opposed to the order, and the indistinctness [is opposed] to the distinctness. But through the confusion arises indistinctness in the representation. That is the cause, why the order pleases.³¹³ (*Reflexionen zur Anthropologie* Nr. 178, Ak. 15, p. 67)

Failing to coordinate the stem, branches, etc., makes the intuition of the tree confused and the awareness of it indistinct, even if it otherwise is clear enough to make me aware of the tree as distinct from other things. My intuition of the tree will be distinct only insofar the faculty of intuition successfully coordinates stem, branch, leaves etc. within the determinate figure of a tree.

Thanks to the faculty of intuition, sensibility is itself perfectly competent to provide me with intuitions, which are ordered and hence not confused. Contrary to the teachings of Wolff and Baumgarten, sensibility is not the faculty of confused or indistinct representations; reversely the understanding is not the exclusive faculty of distinct representations.³¹⁴ Confusion is the absence of order, but order is not the privilege of the understanding, although understanding apprehends and brings attention to the characteristic marks of the intuited object.

Comparing and reflecting on such given marks, and abstracting from those marks which they do not have in common, makes it possible for the understanding to form concepts of common genera and species, like birch, little-leaf linden, etc. The peculiar form of the activities of the understanding is therefore to *subordinate* different objects under concepts of common genera and species.³¹⁵ Kant gives expression these thoughts in a note on Meyer's *Vernunftlehre*, which Adickes dates back to 1769, or alternatively to the beginning of the 1770s:

The logical form of the understanding consists in the logical subordination of the conceptuum communium; the abstraction is the condition under which conceptus communes can be made [werden können].³¹⁶ (*Reflexionen zur Logik*, Nr 2871, Ak. 16, p. 553)

Kant's critique of Leibniz's, Wolff's, and Baumgarten's account of the difference between the sensibility and the understanding has been criticised by scholars like G. H. R. Parkinson and Jean École.³¹⁷ Parkinson correctly notes that a sensation is not a thought, according to Leibniz, but an awareness of a (distinctive) perception, which however is confused in the sense that it does not makes us aware of the infinity contained in the perception. Thoughts also involve perceptions, but that lead to an awareness of ideas (or concepts in the terminology of Parkinson).

³¹³ My translation, J.J.

³¹⁴ As a result of the transcendental turn, Kant introduces a distinction not only between indistinctness and confusion but also between sensible clarity/distinctness and intellectual clarity/distinctness. This brings us to Kant's distinction between sensibility and the understanding, mentioned by Erdmann (1884, p. xlv) in his account of the transcendental turn. Sensibility is a receptive faculty, which represents objects clearly and distinctly, no less than the understanding. Whereas sensible clarity/distinctness belongs to empirical intuitions, intellectual clarity/distinctness belongs to concepts. Concepts are distinct, because there is an awareness of the partial concepts (marks) they contain, so that the concepts can be defined. To my knowledge, Kant never explains what he means by logical clarity, but presumably it involves an awareness of the difference between two concepts. For a general overview of Kant's distinction between intellectual and sensible clarity/distinctness, see Laiho (2012, pp. 149-55).

³¹⁵ To be exact this form is the logical form of understanding, but as will be seen in Chapter 4 and 5, Kant seems to take the form of understanding in a somewhat wider sense, including not only the form of the concept and the judgment, but also the so called laws of understanding, including most notably the principle of contradiction and the principle of sufficient reason.

³¹⁶ My translation, J.J.

³¹⁷ Parkinson (1981, pp. 305-9), École (1991, pp. 269-70).

École, for his part, underlines that according to Wolff the senses give us ideas, i.e. simple apprehensions of notions which, however, are obscurely or confusedly represented. The understanding on the other hand represents the notions distinctly. The difference between ideas and notions is, however, not merely a *quantitative* difference between degrees of confusion, but a *qualitative* one, for whereas ideas are singular, notions are universal. According to École, Kant's misrepresentation of the views of Wolff proves that Kant never read Wolff. Instead he got his views from Baumgarten's *Metaphysica*, § 521 to be exact, where Baumgarten defines the sensitive representations as "non-distinct" (*non distinctiva*).

Disregarding the question of whether Kant read Wolff or not, Wolff himself certainly seems to invite the interpretation that sensations are thoughts, albeit ones that are grounded in the sense organs.³¹⁸ To say that sensations are grounded in alterations in the sense organs does not mean that they are caused by them. The theory of physical influx is at odds with the laws of motion, for the representational force of the soul cannot affect the body, for instance the beating of its heart, unless it adds something to the forces of motion, which act on the body.³¹⁹ However, the latter is inconsistent with the law of conservation of (living) forces.³²⁰

In brief, the causal laws, which hold between bodily movements, such as the beating of the heart and the movements of the blood, do not apply to the relation between the soul and the body. The correctness of this conclusion is underlined by the implausibility of the thought that forces of motion can be transformed, not only quantitatively, but also qualitatively, by being transformed into active forces of representation.³²¹ The states of the soul are hence not causally dependent on the forces of the body. For instance, my feeling of anger is grounded in forces within my soul, which are independent of the bodily forces that cause my heartbeats. Ultimately, it is perfectly possible for me to have the same experience as the one I have now, even if the outer world does not exist:

Since the body contributes nothing whatsoever to the sensations of the soul, all of them could occur, even if no world were present. This is also recognised by Descartes and long before him by the idealists, who recognised nothing but souls and spirits, admitting to the world no other space but in the thoughts. Thus, from what has been argued it is evident that we would see, hear and in other ways feel all things outside us, even if there were no bodily things outside us.³²² (*Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 777)

In the next chapter, we will see how Kant is going to argue that the concept of space, as a pure, a priori concept, makes it impossible to defend Lambert's view that the axioms of geometry are derived from sensations, i.e. from the matter of knowledge. The concept of space is not a concept of empirical intuition, and in this sense, Kant is on the same side as Leibniz. However, Kant will hold against Leibniz that Leibniz failed to explain how it is possible for us to have a pure concept of space, a space which Kant has so far intimated is an absolute space.

In brief, what Kant is going to argue is that the pure concept of absolute space is not an empirical concept of reflection. We will also see how this helps Kant takes a more definite stance to the question posed in the note above: Is space an a priori condition for the coexistence and relatedness of substances, rather than the other way around? To be exact, Kant is going to argue that the

³¹⁸ Cf. *Vernünfftige Gedanken von Gott, der Welt und der Seele der Menschen* § 220

³¹⁹ Wolff, *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 762.

³²⁰ Wolff, *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 762.

³²¹ Wolff, *Vernünfftige Gedanken von Gott, der Welt und der Seele des Menschen*, § 762.

³²² My translation, J.J.

substances are merely phenomenal, and that space is nothing but an a priori principle of the coexistence and relatedness of these phenomena.

In my opinion, what is important here is that Kant's move opens up a new defence line for the theory of physical influx against both Leibniz's theory of the pre-established harmony and Swedenborg's theory of spiritual influx. For if place is a predicate of our representations, rather than the simple substances, it follows that the place of the rational soul in the midst of the world is exclusively a property of the appearance of the body. There is no need to assume that the substance of the body consists of physical monads, i.e. parts, which fill an extended space. The soul can be immaterial and yet interact with, and be influenced by, the substrate of its body, because this substrate is not extended, except in its appearance.

In particular, Kant opens up the possibility that the sensations of the human, rational soul can be explained as an outcome of the influences of its body, in agreement with the theory of physical influence. The objects of outer sensation, i.e. the appearances, do not consist of simple substances. In this sense, Kant is even more radical than the followers of Leibniz are, at least to the extent that they admit that phenomena consist of monads and that monads are located in space, by virtue of their bodily point of view.

4. Locke, Leibniz, Kant and the Idea of Space

The previous chapter dealt with Kant's resolution of the problem of how it is possible for rational souls to have place, without being localised in space like a mathematical point or atom. The human soul is a spiritual substance, but it is localised in space, insofar as it feels its body, as the centre of all direction, from which the soul orients its sensations to outer objects. We have already seen how Kant's investigations led him to abandon his earlier view of space as a relation or order between physical monads. However, so far nothing has been said about the consequences for Kant's concept of space, geometry and the nature of geometric truths, at the end of the 1760s.

In the current chapter, I attempt to fill in these gaps. The *first section* deals with Kant's attempt to come to terms with the question of the origin of the concept of space. Given that space is an absolute space it follows that the idea of space cannot be received from our senses, contrary to what Locke and Lambert thought. Space is a pure concept of form, which Kant, at this stage of his thinking, identifies with a pure concept of understanding. Thus, the concept of space can only be activated, not generated, by the touch or sight of extended objects. Kant's position is in this sense closer to Leibniz who argued that the idea of space is an infinite, continuous whole, which must be innate to the understanding. Interestingly some of these points are echoed already in Locke's own works.

The *second section* therefore takes a somewhat closer look at Locke's empiricist theory of space. According to Locke, the idea of space is a simple sense idea, which we receive by touching and seeing extended material bodies. However, Locke also recognises that we have knowledge of space that includes properties, which cannot be explained in accordance with the principle of empiricism. Whereas the bodies we touch and see are finite and solid with separable and movable parts, space is an infinite, empty and continuous whole, with inseparable and immovable parts. The mind must therefore have an inner power, which enables it to distinguish the idea of space from the ideas of solidity and motion, which means that it cannot be passively received by touch or sight. In all this suggests that space is ontologically independent of material bodies, according to Locke.

The *third section* deals with Leibniz's innatist critique of Locke in the *New Essays*. The idea of space is not a sense idea, but an innate idea of understanding, which abstractly expresses what the outer phenomena have in common, regardless of whether they are seen, heard, tasted, etc. The idea of space is hence an abstract idea which reduces the phenomenon of extension to a plurality of unextended places (mathematical points) rather than points of view. Ultimately, this leads to the idea of a continuous and boundless absolute space, which encompasses all places.

The *fourth section* deals with Kant's late 1760s critique of Leibniz's explanation of the origin and validity of the concept of space. The main point of this critique is based on Euler's objection to the fact that although Leibniz described the idea of space as an innate idea, he actually tried to derive it, as an empirical concept of reflection in the same way as the concepts of species and genera. In short, the concept of space is not an empirical concept of reflection, abstracted from the extension of material bodies and other phenomena. Bodies are extended, only because they occupy spaces, which are possible only as parts of the all-encompassing, continuous space. Space is therefore originally represented as a unique and singular whole, which means that the concept of space is a concept of pure intuition, not an empirical concept of reflection. This gives the key to the transcendental ideality of space, for continuity and therefore also extension is exclusively restricted to the way bodies appear.

4.1 Sensation, Sensibility and Space

We have seen how Kant struggles with the question of the ground of the concepts of direction and how this leads him to the dimensions of absolute space. Dimension is a simpler, more fundamental concept, which takes us to the concept of direction (the humane, bodily felt dimensions), and ultimately to the concept of absolute space. Given that Kant has described his method of conceptual analysis as “Newtonian”, this is perhaps not entirely surprising.³²³ However, it is at this point that Kant’s method encounters its greatest resistance.

In *Directions*, Kant observes that absolute space cannot be the object of an “outer sensation” (*äussere Empfindungen*). Kant’s explanation of this fact is original, for contrary to what one could expect, given that one follows the method of the *Inquiry*, or the method of Lambert’s *Architectonic*, the concept of absolute space is a “fundamental concept” (*Grundbegriff*), that cannot be retrieved from sensation. On the contrary, the representation (“concept”) of the absolute space is a representation, which makes outer sensations possible:

Our considerations make it plain that the determinations of space are not consequences of the positions of the parts of matter relative to each other. On the contrary, the latter are the consequences of the former. Our considerations, therefore, make it clear that differences, and true differences at that, can be found in the constitution of bodies; these differences relate exclusively to *absolute* and *original* space [*absoluten und ursprünglichen Raum*], for it is only in virtue of absolute and original space that the relation of physical things to each other is possible. Finally, our considerations make the following point clear; absolute space is not an object of outer sensation; it is rather a fundamental concept [*Grundbegriff*] which first of all makes possible all such outer sensation. (*Directions*, p. 371, Ak. 2, p. 383)

This suggests that the concept of absolute space is not abstracted from sensations, like the ideas of material bodies, which belong to the matter of knowledge, as Lambert would have it. Could it rather be a concept of understanding, which belongs to the form of knowledge?

In a note on Baumgarten’s *Metaphysica*, which Adickes dates to 1769, Kant develops these observations, by explaining that the concept of space is a pure concept of understanding:

Some concepts are abstracted [*abstrahirt*] from sensations, others merely from the law of the understanding for comparing, combining, or separating abstracted concepts [*abstrahirte Begriffe*]. The origin of the latter is in the understanding; of the former, in the sense. All concepts of the latter sort are called pure concepts of the understanding [*reine Verstandesbegriffe*], *conceptus intellectus puri*. We can of course set these activities of the understanding in motion only when occasioned to do so by sensible impressions and can become aware of certain concepts of the general relations of abstracted ideas [*abstrahirter ideen*] in accordance with the laws of understanding; and thus Locke’s rule that no idea becomes clear in us without sensible impression is valid here as well; the *notiones rationales*, however, arise no doubt by means of sensations and can only be thought in application to the ideas abstracted from them, but they do not lie in them and are not abstracted from them. Just as in geometry we do not derive the idea of space from the sensation of extended beings, although we can clarify this concept only on the occasion of the sensation of corporeal things. Hence the idea of space is a *notio intellectus puri* which can

³²³ *Inquiry*, p. 259, Ak. 2, p. 286.

be applied to the abstracted idea of mountains and of kegs.³²⁴ (*Reflexionen zur Metaphysik*, Nr. 3930, Ak. 17, p. 352)

Kant's picture of Locke's theory of space is most likely based on crude and fragmentary second-hand opinions he received from his reading of Leibniz's *New Essays*. However, even with this fact carefully kept in mind, it seems correct to say that Kant, consciously or unconsciously, put his finger on a weak spot of Locke's theory of space. Even Locke was aware of the difficulties involved in trying to derive the simple idea of *pure space* from ideas of the qualities of bodies, for pure space is something *non-solid, immovable, continuous and infinite*, which bodies are not. Strongly resembling the concept of absolute space, the idea of pure space cannot be given by the senses. Hence, not even Locke is able to consistently defend the notion of space as a sense idea, as will be seen.

Critics of Locke, like Leibniz, suggested that the idea of space is not a simple idea of sensation. Rather it derives from the composite idea of extension, an idea which does not originate from one sense in particular but which is common to the different senses, like sight and touch. For instance, I see the white colour of the table desk and I feel the solidity of its parts. However, the parts of the table desk are confusedly perceived, which means that I do not distinguish its ultimate constitutive parts, i.e. the monads and their organic bodies. This explains why both the whiteness and the solidity are perceived as continuously diffused and therefore as extended, by both sight and touch.

The idea of extension, taken in abstraction from the extended matter, which is given by the particular senses, is a rather odd, ghostlike idea. Gone are the existing matters and their living sensible qualities; left are only their dead, confusedly perceived, continuously diffused situations. These situations have lost their last expressive relation to the embodied monads and their mode of coexisting with each other, which leaves us with nothing but abstract situations or places. Extension is an ideal phenomenal quality but space is even more ideal, even more abstract, inevitably making it play all sorts of tricks with our mind, which tries to conceive it as a thing, or even an ontologically independent substance.

Kant agrees, to repeat, with Leibniz's diagnosis that the idea of space is not an idea of sensation, although sensations play a role in making us aware of it, as we could see in the passage quoted above. On the surface, there are other points of agreement between Kant and Leibniz as well, for Leibniz also describes the idea of space as a pure idea of the intellect, though innate. The problem with Leibniz's account of the idea of space, according to Kant, is that Leibniz also describes it as an abstract idea, which we cannot become aware of except by abstracting it from the extended matter of our sensations. Kant denies, however, that the concept of space can be abstracted from sensations, as we have seen in the passage quoted above. In the terminology Kant uses in the late 1760s, the concept of space is not an empirical reflective concept, but a pure concept of form, a form which Kant still ascribes to the understanding, at this point of his investigation. To straighten out what this might mean it is helpful to take a somewhat closer look at Locke's and Leibniz's doctrines of space.

³²⁴ Translation from Guyer (2008, pp. 81-2).

4.2 The Origin and Reality of the Idea Space: Locke

In *An Essay Concerning Human Understanding*,³²⁵ John Locke (1632-1704) famously makes the claim that the idea of space is an idea of sensation, i.e. an idea derived from the seeing and touching of extended bodies. This claim is often interpreted against the background of his general contention that the *understanding* has no access to any innate ideas or principles and that all its knowledge is “founded” in experience. The original, simple ideas, which the understanding operates with, are all received as a result of either *sensations* or *reflections*.³²⁶ Whereas the ideas of reflection are the result of the mind’s consciousness of its own operations,³²⁷ the ideas of sensations are produced within the mind by objects in the outer world:

Concerning the simple *Ideas* of Sensation ’tis to be considered, That whatsoever is so constituted in Nature, as to be able, by affecting our Senses, to cause any perception in the Mind, doth thereby produce in the Understanding a simple *Idea*; which, whatever be the external cause of it, when it comes to be taken notice of, by our discerning Faculty, it is by the Mind looked on and considered there, to be a real *positive Idea* in the Understanding (...). (E II, viii, 1)

Thus the Perception, which actually accompanies, and is annexed to any impression on the Body, made by an external Object, being distinct from all other Modifications of *thinking*, furnishes the mind with a distinct *Idea*, which we call *Sensation*; which is, as it were, the actual entrance of any *Idea* into the Understanding by the Senses. (E II, xix, 1)

Locke’s way of describing how the understanding receives the ideas of sensation, such as the idea of impenetrability, figures, colours, sounds, smells, etc., can therefore be described in accordance with some version of the theory of physical influx, or the “causal theory of perception”.³²⁸ This is to say that sense perceptions should be taken as acts of *thought* (“Modifications of *thinking*”), which result from impressions of material bodies (“external Object”) on the body of the mind. The outcome of these acts of thought is a simple “idea” or a “sensation”, which immediately *appears* as an object to the *understanding*.

From the simplicity of the sense ideas, it follows that they are easily distinguished from one another, i.e. the understanding easily distinguishes the idea of red from the idea of green, etc. In Locke’s terminology, the sense ideas are *determinate* and therefore also clear and distinct. More generally, Locke gives the following explanation of what is meant by a clear and distinct idea:

As a *clear Idea* is that whereof the Mind has such a full and evident perception, as it does receive from an outward Object operating duly on a well-disposed Organ, so a *distinct Idea* is that wherein the Mind perceives a difference from all other; and a *confused Idea* is such an one, as is not sufficiently distinguishable from another, from which it ought to be different. (E II, xxix, 4)

As can be seen, Locke’s terminology is somewhat different from that of Leibniz and Kant, because according to Locke an idea is clear when it is brought to attention by the mind, but distinct, and

³²⁵ Hereafter, E.

³²⁶ That Locke takes sensations as the source of ideas is evident from E II, i.

³²⁷ E II, vi, 1-2.

³²⁸ Bennett (1967, p. 19).

therefore also determinate, when the mind observes it as different from other ideas. Thus, when Leibniz and Kant speak about clear representations, they mean something closer to what Locke refers to as distinct ideas.

Let us now turn to the details of his explanation of the origin of the simple idea of space. Locke's general contention here is that the idea of space is a sense idea, which follows from the seeing or touching "a distance between Bodies":

I shall begin with the *simple Idea of Space*. I have shewed above, c.4. that we get the *Idea* of Space, both by our Sight, and Touch; which, I think, is so evident, that it would be as needless, to go to prove, that men perceive by their sight, a distance between Bodies of different Colours, or between the parts of the same Body; as that they see Colours themselves: Nor is it less obvious, that they can do so in the Dark by Feeling and Touch. (E II, xiii, 2)

In the passage quoted above Locke explains that the simple idea of space has the same origin as the ideas of the primary qualities of a body, such as its solidity or motion. However, in the examples Locke mentions in support of his statement, it is clear that what he has in mind is not the origin of the simple idea of space, but the origin of the idea of *distance*, which considered in its three dimensions, length, breadth and thickness is a quality of bodies, namely their "capacity" or extension.³²⁹ The idea of a distance is not a simple idea of space, but rather an idea of a "Modification of Space", like the idea of *figure* and *place*.³³⁰

The dimensions and (presumably) also their directions are, in other words, complex ideas of the simple modes of space, modes which I *see* and *touch*. The distance between my eyes and the computer screen for instance is not a condition for its appearance, in front of me, as Kant argues, but part of the very content of my sensible knowledge.

However, none of this prevents Locke from claiming that the mind can acquire an idea of *infinite* and therefore *absolute* space, thanks to the mind's power of "repeating, or doubling any *Idea* we have of any distance, and adding it to the former as often as we will, without being ever able to come to any stop or stint".³³¹ The infinite space is also *pure*, for I can distinguish the idea of space, from the idea of body.³³² The important implication of this seemingly innocent distinction is that the idea of body must be considered as *inseparable* from the idea of space.³³³ This relation is moreover asymmetric according to Locke: whereas the idea of space can be separated from the ideas of body, solidity and motion, the reverse does not hold. The idea of space is, in other words, an idea of pure space, which is *separable* from the idea of body.

Locke's claim that the idea of space is distinct and separable from the idea of body is, more exactly, based on an attempt to show that the general properties of space are opposed to those of bodies. *First*, space is *not solid* like material bodies; whereas solidity is separable from space, solidity is inseparable or essential to a material body.³³⁴ Solidity is furthermore in its turn dependent on space, for it is the resistance a body exerts when it fills a space.³³⁵

³²⁹ E II, xiii, 3.

³³⁰ E II, xiii, 4-10.

³³¹ E II, xiii, 4. To the infinity of pure space, I will return below.

³³² E II, xiii, 11, 13.

³³³ E II, xiii, 11, 13.

³³⁴ E II, iv, 1; xiii, 11-12.

³³⁵ E II, iv, 1; xiii, 11-12.

Secondly, whereas space is a *continuous* whole with *inseparable* parts, material bodies are *discrete* wholes, with *separable* parts.³³⁶ In order to separate one part of space from another I must, Locke claims, cancel the continuity of space, which is not possible; space remains continuous even though it is possible to distinguish a plurality of parts within it.³³⁷ In Locke's terminology, we can "consider" the parts of space, thanks to the introduction of sensible *measures*, but this does not make its parts less inseparable. Material bodies on the other hand have parts, which are not only distinguishable but separable as well, i.e. bodies are discrete.

Thirdly, the parts of space are *immovable*, because of their continuity; the parts of something can move only if they can be separated from one another.³³⁸ According to Locke, this explains why material bodies must have parts which are movable and why the parts of space are in "perpetual rest". Combined with the other two arguments, Locke takes the third argument to be sufficient to demonstrate that the idea of space must be separated from the idea of body and from this he proceeds to the conclusion that it must be *possible* for space to *exist*, without material bodies. The opposite is, however, not possible: material bodies cannot exist unless space exists. The idea of space therefore points ahead towards a pure, empty space which can exist independently of the material bodies that are filling it. In short, space is not identical to the matter that fills it.

Locke develops a number of arguments in favour of the thesis that it is possible for space to exist independently of material bodies. The *first* argument is based on the premise that matter cannot be *infinite* whereas space can:

If *Body* be not supposed infinite, which, I think, no one will affirm, I would ask, Whether, if God placed a Man at the extremity of corporeal Beings, he could not stretch his Hand beyond his *Body*? If he could, then he would put his Arm, where there was before *Space* without *Body*; and if there he spread his Fingers, there would still be *Space* between them without *Body*: If he could not stretch out his Hand, it must be because of some external hindrance; (for we suppose him alive, with such a power of moving the parts of his *Body*, that he hath now, which is not in it self impossible, if God so pleased to have it; or at least it is not impossible for God so to move him:) and then I ask, Whether that which hinders his Hand from moving outwards, be Substance or Accident, Something or Nothing? (E II, xiii, 21)

Those who want to deny the existence of empty space must face the inconvenience of having to explain how something like an infinitely extended body is possible, for if there is no vacuum then matter has to extend to each and every part of space. Locke presupposes, in other words, that he has established that the absolute, pure space is infinite.

The *second* argument is based on the claim that we must accept the possibility of *vacuum* and therefore also the possibility of an absolute, empty space.³³⁹

Farther, those who assert the impossibility of *Space* existing without *Matter*, must not only made *Body* infinite, but must also deny a power in God to annihilate any part of *Matter*. No one, I suppose, will deny,

³³⁶ E II, xiii, 13.

³³⁷ E II, xiii, 13.

³³⁸ E II, xiii, 14.

³³⁹ The term "absolute space" is Newton's; Locke uses the term "pure space" (E II, xiii, 14), as we have seen. Locke discusses the idea of vacuum in E II, xiii, 21- 25. It should be noted that Locke is less optimistic than Newton as to the possibility of demonstrating the existence of absolute space: we cannot determine whether the idea of space is true, that is, whether it refers something, which has real existence (E II, xiii, 26).

that God can put an end to all motion that is in Matter, and fix all the Bodies of the Universe in a perfect quiet and rest, and continue them so long as he pleases. Whoever then will allow, that God can, during such a general rest, annihilate either this Book, or the Body of him that reads it, must necessarily admit the possibility of *Vacuum*. (...) For *Vacuum*, whether we affirm or deny its existence, signifies Space without Body, whose very existence no one can deny to be possible, who will not make Matter infinite, and take from God a power to annihilate any Particle of it. (E II, xiii, 21[*bis*])

Thus, the deniers of vacuum have to face the trouble that they cannot ascribe to God the power of annihilating the material bodies, which is absurd since his powers must be infinite. These arguments prove that vacuum is possible, even if it cannot be affirmed that the vacuum exists. The mere difference between the idea of space and the ideas of body and solidity, indicates the possibility of vacuum and hence the possible existence of a pure, empty space.

The trouble with Locke's separability claim is that it does not seem to sit perfectly well with the rest of Locke's theory of space. The order of the logical dependence between the concepts of space, solidity and material bodies thus seems to extend to the order of the ontological dependence between the possibility and existence of space, solidity, and material bodies. Even if the ideas of distance and extension originate from sensations of extended, solid and moving bodies, it turns out that these ideas border on another idea, namely the idea of pure infinite space. The result is that Locke has to deal with an idea of a pure space that bears strong resemblance to the "absolute space" of Newton, in the sense that he considers this pure space as infinite, immovable and empty of material bodies.³⁴⁰

This impression is substantiated by Locke's claim that space is infinitely extended independently of the finite extension of any material body.³⁴¹ Not only does this suggest that space is the subject of extension, but it also leaves the alternative open that space might be considered as having a reality, separable from the reality of the material bodies. Those who deny this separability and argue that space is nothing cannot explain why there are distances between bodies, for if space is nothing all bodies must touch each other.³⁴² However, if we admit that space is something, rather than nothing, then we are immediately confronted with the question of what this something is. Locke's attitude to the exact ontological status of space, i.e. whether it exists as a substance in itself or not, is, however, cautious and agnostic as always:

If it be demanded (as usually it is) whether this *Space* void of *Body*, be *Substance* or *Accident*, I shall readily answer, I know not: nor shall be ashamed to own my Ignorance, till they that ask, shew me a clear distinct *Idea* of *Substance*. (E II, xiii, 17)

Locke never leaves a clear-cut answer to this question, but if it is the idea of a substance, or an accident, it cannot be maintained that the idea of pure space is a simple idea of sensation, for both substances and accidents are complex ideas. Thus, even if we are prepared to describe space as a substance endowed with powers, the idea of pure space (as a substance) cannot be produced solely by powers located outside the human mind. The suspicion remains that there is something dubious about the idea of space.

These suspicions are not mitigated by Locke's efforts to present the idea of pure space as perfectly sound and consistent with his general empiricist principles. In conceiving the extension of pure

³⁴⁰ See Newton, *Principia*, pp. 408-9.

³⁴¹ E II, xiii, 15.

³⁴² E II, xiii, 16.

space as infinite, we transgress the limit of that which can be experienced, and pass into the field of properties, which are *absolute* and exist in and for God.³⁴³ Thus, in representing space as infinite we rely on the power of the mind to “enlarge” the idea of extension in thought, for only in this way is it possible to come to the idea of *infinity*, typical of pure space:

Every one, that has any *Idea* of any stated lengths of Space as a Foot, finds, that he can repeat that *Idea*; and joining it to the former, make the *Idea* of two Foot; and by the addition of third, three Foot; and so on, without ever coming to an end of his additions, (...) [for] he finds, that after he has continued this doubling in his Thoughts, and enlarged his *Idea*, as much as he pleases, he has no more reason to stop, nor is one jot nearer the end of such Addition, than he was at first setting out; the power of enlarging the *Idea* of Space by farther Additions, remaining still the same, he hence takes the *Idea of Infinite Space*. This, I think, is the way, whereby the Mind gets its *Idea of infinite Space*. (E II, xvii, 3-4)

The distinction between the finite sensible extension of bodies and the infinite extension of pure, geometric space is reflected in Locke’s choice of terminology: he suggests that we should reserve the term “extension” for bodies and describe the infinite extension of pure space, by using the term “expansion”.³⁴⁴

In the context of his discussion of the infinity of space, Locke returns to the question of the ontological status of space. The idea of the infinity of space confirms that the idea of space is separable from the idea of body, for bodies are always finite. The separability of the idea of space does not prove the actual existence of an infinite, empty space, but there is certainly a strong propensity or aptitude within our imagination to conceive of space in this way:

’Tis a quite different Consideration to examine, whether the Mind has the *Idea* of such a *boundless Space actually existing*, since our *Ideas* are not always Proofs of the Existence of Things; but yet, since this comes here in our way, I suppose I may say, that we are apt to think, that Space in itself is actually boundless, to which Imagination, the *Idea* of Space or Expansion of it self naturally leads us. (E II, xvii, 4)

That the power of the mind transgresses the boundaries of the sense idea of space not only explains how it comes to pass that we have an idea of a pure infinite space but also how Euclidean geometry is possible, according to Locke. For the mind has a power to vary not only the idea of the extension of space, but also its ideas of the *boundaries* of the parts of space; as a result it acquires ideas of figures other than the figures it sees and touches.³⁴⁵ The truths of Euclidean geometry are nothing but propositions about these figures, i.e. propositions about possible modifications of its ideas of the boundaries of space.³⁴⁶

On Locke’s theory of geometry, the idea of a figure, for instance a circle or a rectangle, is not just a chimera of the brain, but an idea in the mind of the mathematician. However, there is nothing which grants that the truths extracted from the ideas of these figures are also true of the real things outside his or her mind.³⁴⁷ Thus, the truths of Euclidean geometry hold with absolute necessity with respect to ideal geometric objects, like rectangles or circles, but only contingently with respect to

³⁴³ E II, xvii, 1.

³⁴⁴ E II, xv, 1.

³⁴⁵ E II, xiii, 5.

³⁴⁶ All figures are therefore simple modes of the idea of space.

³⁴⁷ E IV, iv, 6.

real things. For short, in Locke's explanation of Euclidean geometry, as the science of the boundaries of the parts of the infinite, pure space, there is nothing, which grants that the spaces of real material bodies conform to Euclidean geometry. Let us now see how Leibniz tackles these and other problem, associated with the origin and reality of the idea of pure space.

4.3 The Origin and Reality of the Idea of Space: Leibniz's Critique of Locke

On a superficial level, it seems as if both Leibniz and Locke argue that the idea of extension originates from touching and seeing extended material bodies. However, according to Leibniz the perception of extension is not the privilege of any particular sense, like sight or touch, but belongs to the sense that is common to them, namely the common sense, the imagination.³⁴⁸ More specifically extension is a quality, which is common to the phenomena of colours, the qualities of touch, etc. The extension of the paper on my desk for instance, is both in the white colour I see and in the smooth surface I touch.

Once the perception of extension, in the common sense, is *apperceived* and hence brought to the *attention* of the understanding, an idea of extension is formed.³⁴⁹ The idea of extension represents extension abstractly, apart from the actually infinite simple parts into which it is divided. Gone are the qualitatively distinct monads and their active forces; gone are also the passive forces of the monads, out of which the extended matter is formed. In the cleansing fire of abstraction, nothing remains except their bodily points of view, which are compressed into a plurality of uniform, situationally related mathematical points. Gone are also the boundaries, which disappear because of the uniformity of the mathematical points, as De Risi observes.³⁵⁰

This leaves us with an indeterminate (infinite) place of all places, a whole which is prior to its parts, namely because these parts depend on the image of boundaries within the absolutely unbound place. Only the intellect can prevail in the face of this infinity, which it does by forming the idea of *space*, i.e. the idea of a continuously diffused plurality of compossible situations or places.³⁵¹ Continuity is what makes a plurality of simultaneous situations or places a continuous quantity, i.e. a whole of indeterminate parts, or more formally, a whole such that any two parts which equal the whole must have something in common, something which however, is not a part of the whole.³⁵²

In the *New Essays*, Leibniz provides his readers with additional information about the ideas of common sense in general and the idea of space in particular. The ideas of common sense may be of mixed origin, but they are nonetheless from the mind and in this sense innate:

These ideas [*idées*] which are said to come from [*venir de*] more than one sense – such as those of space, figure, motion, rest – come rather from the common sense, that is, from the mind [*de l'esprit*] itself; for they are ideas of the pure understanding [*de l'entendement pur*] (though ones which relate to the external

³⁴⁸ *On what is Independent of Sense and of Matter*, G VI 502, L 549.

³⁴⁹ Leibniz connects apperception or awareness with attention, for instance in *New Essays*, pp. 51-3.

However, awareness is also reflection, and as reflection, it is the source of ideas.

³⁵⁰ De Risi (2007, p. 178).

³⁵¹ Whereas extension can be defined, according to Leibniz, the concept of situation and place cannot. It is in this sense a "simple concept", to phrase it in the terminology of Lambert, albeit relational, contrary to what Lambert thought.

³⁵² Furthermore, the parts of continuous quantities are exterior to each other, i.e. any two parts, which taken together do not equal the whole, must have nothing in common. For a discussion of Leibniz's definition of continuity, see De Risi (2007, pp. 190-3).

world and which the senses make us perceive), and so they admit of definitions and demonstrations. (*New Essays*, p. 128)

Thus, the intellect recognises something of itself in the idea of space, namely the ideas of plurality and the order of compossible situations. However, the idea of continuity remains an alien idea of imagination.³⁵³

That space is a continuous whole entails that space is the order of all situations – it is the place of all places.³⁵⁴ However, that space is an order of all situations does not entail that it is a continuous whole. The uniformity (isotropy) of the situations is insufficient for it to become an extended manifold.³⁵⁵ Thus, it is perfectly possible to have places, which are situated, without being extended, as is illustrated by the possibility of reducing places to mathematical points.

Only the continuation of the situation bridges the gap from situation to extension. Leibniz's unsuccessful attempts to demonstrate that continuity follows from the concept of space as a complete order of situations, illustrates this.³⁵⁶ It means that it becomes difficult for Leibniz to conceive the idea of space as a pure intelligible idea of a complete order of situations, which does not rest on any input from the senses or the common sense.³⁵⁷ Leibniz's attempt to demonstrate that the idea of pure space is an innate idea of pure understanding is from this point of view as failed as Locke's attempt to show that it is a simple idea of sense.

Forming the idea of an absolute space, a complete order of situations, easily results in the spurious concept of space as actually infinitely extended, or actually infinitely divided. Later, in Kant's *Critique of Pure Reason*, these two nasty concepts would turn up in the theses of both the first and the second mathematical antinomy. Thus, if the idea of immensity is displaced to the phenomenal space of bodies, which we know as an outcome of measurements, we are led to the spurious idea of space as a whole of actually infinite parts. This spurious idea suggests that space is absolute, not because it is the place of all places, but because it is a whole, made up of an actually infinite (greatest) number of parts.

Locke's contention that the mind has a power to take the idea of the extension, which it originally has from sight or touch, and enlarge it into an idea of a pure, infinite space just shows that we must have an innate ability to form a concept of the infinite:

That shows how our ability to carry through the conception of this idea comes from something within us, and could not come from sense experience; just as necessary truths could not be proved by induction or through the senses. The idea of the absolute is internal to us, as is that of being: these absolutes are nothing but the attributes of God; and they may said to be as much the source of ideas as God himself is the principle of beings. The idea of the absolute, with reference to space, is just the idea of the immensity of God and thus of other things. But it would be a mistake to try to suppose an absolute space which is an infinite whole made up of parts. There is no such thing: it is a notion which implies a contradiction; and

³⁵³ Leibniz discusses the pure intellectual ideas in *New Essays*, p. 81.

³⁵⁴ C.f. *The Controversy between Leibniz and Clarke*, Leibniz's Fifth Paper, Sections 47, G VII 400.

³⁵⁵ The uniformity of space also makes it isotropic, which means that its geometry is preserved everywhere; see De Risi (2007, pp. 179-181).

³⁵⁶ Unfortunately Leibniz never succeeded to work out a satisfying concept of a continuous manifold, as De Risi (2007, pp. 182-91) shows. For the most part Leibniz confused the concept of a continuous quantity with the concept of a connected and complete set of mathematical points.

³⁵⁷ This issue will be dealt with in some closer detail below.

these infinite wholes, and their opposites the infinitesimals, have no place except in geometrical calculations, just like the use of imaginary roots in algebra. (*New Essays*, p. 158)

Exercising the innate ability of forming intellectual ideas provides us with an idea of infinity, which actually originates from God's immensity. It puts us in a position to explain what Locke failed to explain, according to Leibniz, namely how it is possible for us to have an idea of infinite space. It is an idea which puts us in a position to form the idea of an absolute space, for that which is immense is absolute as God himself.

In this context, Leibniz notes that Locke only describes space as infinite, but never as a completed infinite whole. We have an idea of the infinity of space, but not an idea of an infinite space, as Locke expresses it.³⁵⁸ The actually infinite is only "in the *absolute*", for only in this way is it possible for us to have a concept of an infinity, which "precedes all composition and is not formed by the addition of parts."³⁵⁹ Thus, according to Leibniz absolute space is not actually infinite, but only syncategorematically infinite, i.e. potentially infinite, in the sense that its parts are without boundaries or limits.³⁶⁰

The property of being actually infinite is exclusively a property of God. God's actual infinity is, however, not categorematic, i.e. God does not contain an actual infinity of parts. Instead, the infinity of God is hypercategorematic, i.e. God is infinite in the sense that he is beyond all determinations.³⁶¹ God's essence hence contains all things and determinations, neither actually nor even potentially, but eminently, in the same way as the more perfect comprises and grounds the less perfect. It is also in this sense that it is possible for God to be simple and indivisible, and yet a whole, which contains all parts, namely eminently. Leibniz explains this in a crossed-out passage of a letter to Des Bosses written 1706, i.e. a couple of years after the *New Essays*:

There is a syncategorematic infinite or passive power having parts, namely, the possibility of further progress by dividing, multiplying, subtracting, or adding. In addition, there is a *hypercategorematic infinite*, or potestative infinite, and active power having, as it were, parts eminently but not formally or actually. This infinite is God himself. But there is not a *categorematic infinite* or *one* [my italics, J.J.] actually having infinite parts formally. (*The Leibniz-Des Bosses Correspondence*, p. 53, G II 314-315)

In absolute space all directions are dissolved. They can, however, be reintroduced since it is possible to imagine any mathematical point as abstractly expressing a point of view, from which lines can draw in a definite direction. Planes bounded by these directed lines, which intersect the absolute space into parts, will then be oriented as well, for instance to the right, to the left, etc. Figures, which are either congruent or incongruent can thus be constructed on the oriented planes.

³⁵⁸ *New Essays*, p. 159.

³⁵⁹ *New Essays*, p. 157.

³⁶⁰ De Risi (2007, p. 333) connects the finiteness of any image of space (synthesis) with the "limited aesthetic comprehension of each monad." The perceptual space of the monads has a horizon and no microscopical definition of detail. On the other hand, it is exactly the ideality of space, which makes it possible to extend any finite image of space in another act of perception; space is always greater than any given image of it. The ideality of the perceptual space of the monad thus explains its potential, syncategorematic infinity.

³⁶¹ For an interesting discussion of the hypercategorematic infinite in Leibniz, see Maria Antognazza (2015, pp. 5-30)

The properties of figures are systematically presented in the propositions of Euclidean geometry.³⁶² Typical of figures is that they are limited by boundaries (*bornes*), such that there is an infinity of paths between any pair of points within the extension of the space they limit.³⁶³ Figures also share some of the properties of the absolute space of which they are parts, namely its uniformity and continuity. Thanks to this, there is no curvature in the space within the figure, which makes figures completely determined by their boundaries, in accordance with Leibniz's concept of figure.³⁶⁴ Indirectly Euclidean geometry therefore presupposes that the boundaries it describes are boundaries of spaces, which share some of the fundamental properties of the global, absolute space, in which they are enclosed.

From the possibility of determining what belongs to figures, merely by describing their boundaries, Leibniz concludes that the absolute space cannot have more than three dimensions.³⁶⁵ Thus, in a one-dimensional space, boundaries will be points, but points will not determine anything other than the ends of lines. Lines can be possible boundaries of plane figures in a two-dimensional space and in a three-dimensional space, planes describe possible boundaries of solid shapes, i.e. volumes. Volumes are bound, but they are not themselves boundaries of any higher order geometric objects which means that figures of higher dimension than three are impossible.

Leibniz's proof of the three-dimensionality of absolute space thus presupposes that figuration and hence imagination sets the limits of the number of dimensions that are possible. Leibniz's argument for the three-dimensionality of space is hence not purely geometrical, as De Risi observes.³⁶⁶ Rather, the argument is metaphysical, in the sense that it tries to show how the properties of absolute space, as they are conceived in thought, can determine what the common sense can figure. Thus, it argues from the possible dimensions of figures to the possible dimensions of absolute space. To me it seems as if Leibniz's argument is metaphysical in another sense also, namely because it presupposes that it is possible to argue from the properties of global space to local spaces. The latter is typical of ideal structures, as will be seen below, i.e. it presupposes that we can reason from the properties of the whole to the properties of the parts.³⁶⁷

In a dialogue on the philosophy of Malebranche, *Conversation of Philarète and Ariste, Following a Conversation of Ariste and Theodore*, written 1712, Leibniz summarises his inquiry of the roots of the concept of absolute space. The concept of absolute space can be seen as an attempt to replace the material body as a subject of extension, which has been dissolved as a result of the act of abstraction. Thus, in desiring to recover the unity of the body, our understanding makes an attempt to bring the totality of situations (places) under one single concept of an absolute space – the place of all places. This space is conceived as a first ground or subject of all common, universal

³⁶² Like propositions of fact these propositions are without exception analytic, according to Leibniz. However, contrary to propositions of fact, they are true merely by virtue of the principle of contradiction and hence absolutely necessary. The propositions of Euclidean geometry are thus innate truths, propositions true in all possible worlds, in spite of the contingency of the fact that there are things in our world which exist in space.

³⁶³ *New Essays*, p. 148.

³⁶⁴ See De Risi (2007, pp. 210-15) for a more detailed discussion of Leibniz's concept of figure.

³⁶⁵ De Risi (2007, pp. 210-15).

³⁶⁶ De Risi (2007, p. 210).

³⁶⁷ Leibniz does not make the three-dimensionality a premise for the ideality of space, as Kant does in the *Critique of Pure Reason*, when he argues from the three-dimensionality to the synthetic a priori nature of Euclidean geometry and from this to the ideality of the space which constitutes the object of this geometry (see Chapter 6, appendix). On the contrary, it can be argued that Leibniz makes the ideality of space an implicit premise of his argument for the three-dimensionality of space.

places, which are untouched by the moving and relative places of the phenomena, from which it is abstracted:

Thus the diffusion of place [*Lieu*] forms space, which would be the first ground [proton dektikón] or the primary subject of extension, and by which it would also apply to other things in space. Thus extension, when it is an attribute of space, is the diffusion or continuation of situation [*situation*] or locality [*localité*], just as the extension of a body is the diffusion of antitypy [*resistance*] or materiality. For there is position [*lieu*] in a point as well as in space, and as a result there can be position without extension or diffusion, but diffusion in simple length constitutes a localised line endowed with extension.³⁶⁸ (*Conversation of Philarète and Ariste, Following a Conversation of Ariste and Theodore*, G VI 585, L 622)

Leibniz's contention that space is a ground or subject certainly presupposes that its relation to its predicate (extension) is a peculiar one. For generally a subject is thought to *contain* its predicate, in the same way as a universal concept contains a particular concept. In the case of space, however, the subject contains its predicate, by being *within* it, as a plurality of places. Space "comprehends" (*comprends*) all places, as Leibniz expresses it, which means that we can describe space as an ordered set of all places.³⁶⁹

Russell correctly points out that none of this entails that Leibniz considers space as an ontologically independent substance.³⁷⁰ Space cannot be conceived in the same way as a thing, and in particular not as a substance. For if absolute space is a substance it will exist as a thing in its own right, and not just as an expression of the order of coexistence of other things, i.e. the monads and their organic bodies. Russell does not mention this link, but correctly observes that an absolute space would be contrary to principle of individuation.³⁷¹ For as we have seen space is "absolutely uniform", being indistinguishable at all points. Leibniz does not dismiss the idea of an absolute space, a place of all places, but denies that it exists in itself. The idea of an absolute space which exists in itself is nothing but an idol, a chimerical notion of an ideal thing, as Leibniz explains in his third letter to Clarke:

I call it an idol, not in a theological sense, but in a philosophical one, as Chancellor Bacon says that there are *idola tribus*, *idola specus*. These gentlemen maintain, therefore, that space is a real absolute being. But this involves them in great difficulties, for such a being must needs be eternal and infinite. Hence some have believed it to be God himself, or one of his attributes, his immensity. But since space consists parts, it is not a thing which can belong to God. (*The Controversy between Leibniz and Clarke*, G VII 363, L 682)

The alternatives for taking space as a substance are to regard it as either an accident of extended bodies or of God.³⁷² The problem with the first alternative is that it does not make space any more real than the bodies, which occupy the parts of space, which are mere phenomena, according to Leibniz. The problem with the second alternative is that it would make it necessary to conceive of

³⁶⁸ Cf. *The Controversy between Leibniz and Clarke*, Leibniz's Fifth Paper, Sections 46-7, G VII 399-402, L 703-4.

³⁶⁹ *The Controversy between Leibniz and Clarke* G VII 400, L 703; the view that Leibniz describes space as a set, namely the set of all places, is defended by De Risi (2007, pp. 173-5).

³⁷⁰ Russell (1964, pp. 119-20).

³⁷¹ Russell (1964, pp. 119-20).

³⁷² Russell (1964, p. 119).

God as a composite thing, endowed with parts.³⁷³ God is, however, completely simple and has no parts, which means that the absolute space must be different from God.³⁷⁴ Russell concludes that for Leibniz (absolute) space is *purely ideal* (“subjective”), for the only things which ultimately are real are the monads, and monads cannot be located in space.³⁷⁵ The locations of monads are, as we have seen, nothing but points of view, according to Russell, points of view, which result from the monads’ confused perceptions.

More recently, Glenn A. Hartz and J. A. Cover have defended a somewhat similar position.³⁷⁶ The absolute space described above is ideal, for reasons closely related to the phenomenalist interpretation of Leibniz’s monadology, presented in the previous chapters, according to which simple substances and even corporeal substances lack all spatial properties. There are, admittedly, no monads in space, according to Leibniz. However, contrary to Russell, Hartz and Cover argue that Leibniz does not consider space as ideal, because space cannot be reduced to the monadic attributes of substances.³⁷⁷ Instead, space is ideal because it is *abstracted from* extended phenomena, most notably the material bodies.³⁷⁸ The ideality of space shows itself in its continuity, which makes it an analytic whole, which is possible prior to its indeterminate parts.³⁷⁹ Phenomena, on the other hand, are real wholes of discrete and determinate parts, which are possible only posterior to their parts.³⁸⁰

In short, Leibniz’s metaphysics is a building with three floors: monads, phenomena, and abstract things (space/time).³⁸¹ Of these floors only the two first are real, which means that only the phenomenon of extension is real, but not space. To me it seems as if this interpretation correctly identifies space as an ideal, continuous whole, which is prior to its indeterminate parts. However, from this it does not follow that phenomena are unconditioned by space in the way Hartz/Cover suggest. According to Hartz/Cover, space is of course conditioned by phenomena, because it is an abstraction from extended things. Phenomena on the other hand are unconditioned by space, for it is perfectly possible for a thing to be extended even if it does not occupy a space.³⁸² This seems entirely inconsistent with Leibniz’s concept of extension, for it suggests that it is possible for a phenomenon to be extended even if it is made up of discrete parts which are not diffused.

A more promising line of interpretation, which removes these anomalies, is to conceive the phenomena as conditioned not only by monads, but also by space.³⁸³ On this interpretation space is not an idea abstracted from the extension of real bodies, but rather a condition of their extension. Thus, the extension of space arises from a synthesis of situations, which is the same synthesis as

³⁷³ Leibniz, *The Controversy between Leibniz and Clarke*, G VII, 399, L 702.

³⁷⁴ God’s presence to all things is virtual and not local from which it follows that space cannot be the sensorium of God, as Clarke and Newton argued. God sees all things in himself, not in absolute space. God contains absolute space, only eminently, as its cause. God is therefore the origin of the reality of space and of our knowledge of the properties of space, and in this sense also omnipresent: “He is the source of possibilities and of existents alike, the one by his essence and the other by his will. So that space like time derives its reality only from him, and he can fill up the void whenever he pleases. It is in this way he is omnipresent.” (*New Essays*, p. 155)

³⁷⁵ Russell (1964, p. 122).

³⁷⁶ Hartz/Cover (1988).

³⁷⁷ Hartz/Cover (1988, pp. 513-5).

³⁷⁸ Hartz/Cover (1988, pp. 504-5, 510).

³⁷⁹ Hartz/Cover (1988, pp. 497, 503-10).

³⁸⁰ Hartz/Cover (1988, pp. 497, 503-10).

³⁸¹ Hartz/Cover (1988, pp. 503-7).

³⁸² To be exact bodies do not occupy space at all, according to Hartz/Cover (1988, pp. 510-11).

³⁸³ For a similar suggestion, but with somewhat different implications, see Adams (1994, pp. 233-4, 253-4).

the synthesis involved in the confused perception of an extended body. Thanks to this we can speak about Leibnizian space as real, namely as a space of outer phenomena, most notably the organic bodies, which give the monads their outer points of view. The ideal complete order of compossible situations thus abstractly represents what belongs to any order of coexistence, such as the order of coexistence of the phenomena, which in turn is homomorphic to the order of coexistence of the noumena (monads).³⁸⁴

To summarise, we can say that Leibniz's innatism gives him a number of advantages, as compared with Locke. First, it is much easier for Leibniz to explain the origin of the phenomenon of extension, as distinct from the solid, movable, and discrete extension of bodies. The original phenomenon is both produced and perceived by the imagination, as it synthesises the phenomena and their situations. The perception of extension is hence not originally given to the embodied senses. True, I can see the extended table-top by my sight, or feel it under my fingertips, but the extension seen is inseparable from its white colour, and the extension seen is inseparable from its solidity. The original phenomenon of extension is already from the outset something abstract and common to the outer senses, like sight or touch. For short, the phenomenon of extension is originally internal to the common sense, i.e. to the imagination.

Secondly, it is easier for Leibniz to explain the origin of the idea of extension and pure space, than it is for Locke. The phenomenon of extension is, to repeat, internal to common sense, which makes it fully uncovered for the attentive and reflective light of understanding. Imagination is in this sense both the womb and the birthplace of the pure idea of extension. In the idea of extension, understanding proudly recognises the idea of space, i.e. the idea of an infinite order of situations, an idea internal to itself, which is innate to understanding. Thanks to the innateness of the idea of space, it becomes possible for Leibniz to explain why the idea of pure space is conceptually independent and separable from the idea of bodily extension.

Thirdly, Leibniz is less ambiguous about the reality of space than Locke is. Pure space is neither a substance, nor an accident, but an ideal whole of situations or places, which is real only as an order of outer phenomena, which conditions the perception of them as extended. Though more is needed in order to show that space is Euclidean, we can at least imagine an argument for thinking that Euclidean geometry is not just contingently true of the figures and spaces of real, material bodies, contrary to what Locke thought.

Disregarding the question of whether Leibniz's innatism is convincing or not, Leibniz's critics were not convinced about the correctness of his explanation of the idea of space. Reflection can never give us anything except general ideas, like the ideas of species and genera, but not the idea of space, which is an individual whole. To Kant this suggested that there is something fundamentally wrong about Leibniz's innatist explanation of the origin of the idea of pure space. Let us consider these objections more closely.

4.4 Kant's Critique of Leibniz and the Ideality of Space

We have already seen how Kant had questioned Leibniz's philosophy of space in his essay on the directions of space from 1768. Kant had found support for this position in Leonard Euler's *Reflexions sur l'espace et le temps*, printed 1750, in the *Memoires de l'academie des sciences et*

³⁸⁴ Leibniz even intimates that the ideal, absolute space of possible situations is that which makes it possible to situate the bodies of the monads (*situables*); see Leibniz, *The Controversy between Leibniz and Clarke*, Leibniz's Fourth Letter, G VII, 376, L 690.

belles lettres. In this work, Euler had argued that the mathematical concept of space (*l'expression mathématique*) can represent space as it is absolutely and independently of the bodies which are placed in it. Euler contrasted this concept with the metaphysical concept (*l'expression métaphysique*) of space, a concept obviously associated with Leibniz, although Euler never mentions Leibniz by name.³⁸⁵

The metaphysical concept of space is a concept of a place, abstracted from the places of bodies, stones, particles of water, etc. The result is a distorted, abstract concept of an imaginary species or genus of place or order:

It is true that the senses are not capable of providing us with ideas of space and position [*lieu*], and it is only through reflection [*réflexion*] that we form them. From this they [the metaphysicians J.J.] conclude that these are merely abstract ideas, similar to the ideas of genus and species, which only exist in our understanding and to which no real object corresponds. But it seems to me that this conclusion is hasty [*précipité*], for if we think about it, we will easily apprehend [*s'appercevoir*] that the manner through which one arrives at the idea of space and of time is quite different from that through which we form the ideas of genus and species.³⁸⁶ (*Reflexions sur l'espace et le temps*, § 14, p. 329)

The claim that the idea of space is an idea of an imaginary place in general must be wrong, according to Euler. Though it is correct that we can form an idea of place by reflection, this idea is the idea of a relative place, which cannot represent the absolute place of an inert body. This means that something must be added to the idea of place, which we form by virtue of reflection. In support of this claim, Euler pointed out that an inert body must have a real place, which is independent of its situation with respect to other bodies, for otherwise it becomes impossible to conceive how it can conserve its position and velocity.³⁸⁷

For instance, if we consider a stone in still water, its place will depend on its relation to the particles of water, which surround it.³⁸⁸ However, if the water starts moving, the stone will remain in the same place, or move somewhat, but not as fast as the water, even though the force of the water moves it.³⁸⁹ From this it follows that the stone is inert, a property which cannot be explained, unless it is assumed that the stone has a place in an ultimately immovable, absolute space.³⁹⁰

However, against this Leibniz can argue that Euler misrepresents his position. In reality, Euler's example proves nothing against Leibniz, for Leibniz can always argue that Euler's example just shows that we need a concept of what it is for a thing (say a stone) to be in the same place. It just means that the stone's mode of coexisting with the particles of water that once surrounded it is the same as its mode of coexisting with the particles of water that replaced them, making its order of coexistence with respect to the former particles congruent with the order of coexistence of the latter particles. Thus, the concept of sameness of place is perfectly consistent with the "metaphysical concept" of space as an order of situations. Moreover, Leibniz can also argue that none of this favours one explanation of the inertia of the stone over another explanation, i.e. that Leibniz's concept of sameness of place does not presuppose Newton's concept of inertial force. Though it

³⁸⁵ *Reflexions sur l'espace et le temps*, § 8, p. 327.

³⁸⁶ My translation, J.J.

³⁸⁷ *Reflexions sur l'espace et le temps*, §§ 1-5, pp. 324-6.

³⁸⁸ *Reflexions sur l'espace et le temps*, §§ 7-8, pp. 326-7.

³⁸⁹ *Reflexions sur l'espace et le temps*, §§ 8-11, pp. 327-8.

³⁹⁰ *Reflexions sur l'espace et le temps*, §§ 11-13, pp. 328-9.

remains perfectly correct that none of this tells us whether the stone has preserved its absolute place, it remains impossible to determine this place except by the help of a reference body, for instance the shore and ultimately the surface of the Earth, which just brings us back to Leibniz's concept of space.

Kant also questions that Euler's proof of the reality of absolute space is correct.³⁹¹ We have no outer sensation of absolute space, which we can refer to in order to determine the places and orientations of physical bodies. Rather, we determine the places of bodies by relating them to some reference body. Reference bodies are perceivable, but absolute space is not. Space is absolute, not because it is sufficient to *determine* or specify the orientation of bodies, but because it serves as a condition under which such an orientation is possible in the first place, without which we cannot explain the phenomenon of incongruent counterparts.

Leibniz's geometry of situation (*analysis situs*), that is, the geometry which analyses the conditions of situational identity (congruency) illustrates this thesis.³⁹² Thus, according to Leibniz's functional definition of congruency, two objects are congruent, because they are qualitatively similar and quantitatively equal respectively.³⁹³ The left glove and a right glove will for instance be congruent, for they are of equal size and similar shape. However, from our bodily point of view, we experience that the gloves are incongruent, namely because it is impossible to fit the left glove to the right glove, without altering its shape. Incongruent objects, like a pair of gloves, are typically both similar and equal, but still distinguishable, because one is oriented to the left and the other to the right. This indicates that one object cannot be congruent with another object, unless we take the orientation of the objects into consideration.

However, Leibniz can argue that Kant's critique is irrelevant. First, it might be argued that Leibniz has taken account of the orientation of space, i.e. the directedness of the order in accordance with which the monads coexist with each other. For each monad is endowed with an organic body, as we have seen, which means that the order according to which the monads coexist will appear differently to each monad. Thus, space must be orientable, at least locally, for places are nothing but ideal, abstract expressions of the points of view of the monads and their organic bodies. Moreover, space is an all-encompassing whole, according to Leibniz, which is prior to its parts, which means that the global properties of space, such as its directedness, are true of its parts as well.³⁹⁴

Secondly, it might be argued that Kant's critique is missing its target, since it presupposes a definition of situational identity other than the one suggested by Leibniz. On this definition, the left glove and the right glove are incongruent, not because they are functionally incongruent, but because a motion which makes the left glove fit the right glove has to be non-rigid. In this context, this means that we cannot make the left glove fit the right glove without rearranging the parts of the left glove (thumb, fingers, etc.). Thus, in this case the motion that makes the left glove fit the right glove is non-rigid, because it distorts the shape of the left glove. What remains left of Kant's critique against Leibniz then is only the charge that the orientation of space compels Leibniz to use a concept of congruency, which is based on rigid motions, rather than the concept of functional congruency.³⁹⁵

³⁹¹ *Directions*, p. 366, Ak. 2, p. 378.

³⁹² For an interesting discussion of the evolution of Leibniz's thoughts about similarity, equality, and congruency, see De Risi (2007, pp. 132-52; 283-93).

³⁹³ The functional concept of congruency is discussed in De Risi (2007, p. 282).

³⁹⁴ For an extremely interesting discussion of the relation between the ideality of absolute space and the priority of the whole over its parts, see De Risi (2007, p. 286).

³⁹⁵ Though De Risi generally defends Leibniz against Kant, he reproaches him for not being able to defend his identification of functional congruency and through-motion congruency; see De Risi (2007, p. 286).

On the surface, it even seems as if Kant might have shared Leibniz's explanation of the concept of space, for as we have seen Kant describes the concept of space as a pure concept of understanding. Kant's marginal notes on Baumgarten's *Metaphysica*, written around 1769, seem to support this interpretation. In one of these notes, Kant outlines four possible alternatives:

Concepts are either intuitive or reflective. The former either sensitive intuition or pure intuition, to the extent they are either in the matter or solely in the form of the sensitive representation. Reflective concepts are likewise either empirical or pure. The former are universal concepts containing the matter given to the senses; the latter are only containing the form. Space and time are pure intellectual concepts. Metaphysical notions are pure rational concepts.³⁹⁶ (*Reflexionen zur Metaphysik*, Nr. 4073, Ak. 17, pp. 404-5)

Thus, the concept of space is a pure concept of understanding, according to Kant. However, from this it does not follow that Kant endorsed Leibniz's explanation of the idea or concept of space. Rather he seems to have shared Euler's view that Leibniz conceived the concept of space as an empirical concept of reflection.³⁹⁷ It is a concept which arises from a reflection of what bodies have in common, apart from everything that cannot be separated from the nature of the body.

Reflection will therefore only give us a concept of place, but not the concept of an extended space. Thus, only place is separable from body, not its extension, as Euler pointed out:

But the idea of the position [*lieu*] that a body occupies is not formed by excising [*retranchant*] some determination [*determination*] of the body; it results from removing the entire body, so that position is not a determination of the body, as it still remains after removing the entire body with all quantities involved. For it must be noted that the position that a body occupies is quite different from its extension; extension belongs to the body and is preserved by the body when moving from one position to another, whereas position and space are not susceptible to any type of movement.³⁹⁸ (*Reflexions sur l'espace et le temps*, § 15, p. 330)

Locke had tried to avoid this dilemma by describing the infinite pure space as expanded rather than extended. To Locke this just underlined that the idea of pure space is separable from the idea of body, namely because it is an idea of a whole of penetrable, inseparable, immovable parts, which presumably is ontologically independent of the bodies localised in it.

To this Leibniz famously responded that the extension of a body is the same as the extension of the space it occupies:

Body could have its own extension without that implying that the extension was always determinate or equal to the same space. Still, although it is true that in conceiving body one conceives something in addition to space, it does not follow that there are two extensions, that of space and that of body. Similarly, in conceiving several things at once one conceives something in addition to the number, namely the things

³⁹⁶ My translation, J.J.

³⁹⁷ This is partly guesswork unfortunately, for Kant does not say anything about how the concept of space is formed according to Leibniz. In the *Inaugural Dissertation*, p. 397, Ak. 2, p. 404, Kant clearly suggests that the Leibnizians take the "properties of space" to be "borrowed" from experience. Later, in the 1770s, Kant came to describe Leibniz as holding the view that the concept of space is "intellectual, but confused"; see *Reflexionen zur Metaphysik*, Nr. 4851, Ak. 18., p. 9. This seems to suggest that the concept of space is more like an intellectual concept, though derived from reflection, like the empirical concepts.

³⁹⁸ My translation, J.J.

numbered; and yet there are not two pluralities, one of them abstract (for the number) and the other concrete (for the things numbered). (*New Essays*, p. 127)

Leibniz noted that in conceiving a body in space, we add something to the space it occupies, but in doing so, we are not conceiving two different extensions (volumes), one of space and the other of the body.³⁹⁹ The body has a volume only because of the volume of the space it occupies; the volume of the stone in Euler's example is in *that* respect not any way different from the position of the stone. This is also what we can expect, considering that space is ultimately place, namely an order of situations. Euler's distinction between the extension of space and the extension of the body is just an unwarranted consequence of the spurious concept of absolute space as an ontologically independent thing or substance.

However, if this is correct it can no longer be argued that space, or even extension, is originally abstracted from an extended thing. If anything, extension must be added to the bodies, for they are aggregates and therefore discrete quantities, unlike space and time, which are continuous quantities.⁴⁰⁰ This seems consistent with Leibniz's contention that the idea of space is innate to the understanding, but not entirely, for even if we have the idea of space as an order of simultaneous situations, it does not entail that we have an idea of space as an order of continuously diffused situations. Continuity is a determination, which only belongs to space, as a condition of the synthesis involved in a confused perception. Hence, the confused perception of a body presupposes a continuous synthesis of the situations of a plurality of qualitatively indistinguishable, homogenous matters, which leads to the representation of an extended space. From this point of view space is not an idea of the intellect, but a form of the sensibility, in the sense that it conditions the synthesis of situations into images of extended phenomena.⁴⁰¹

Kant was most likely not aware of Leibniz's critique of Locke's distinction between concrete and abstract extension. Instead, he seems to have accepted Euler's view that the Leibnizians misrepresent the concept of space, by presenting it as an empirical concept of reflection, abstracted from the finite extension of bodies. Thus, the Leibnizians fail to explain the original representation of space as an infinite continuous whole, which is prior the finite extension of things. Spaces of things are hence not possible except as parts of the same all-encompassing space:

One can think of no space, for instance a cubic foot, without an outer space which surrounds it and hence no space except as contained in the whole. Similarly no two spaces without a determinate distance and place with respect to each other.⁴⁰² (*Reflexionen zur Metaphysik*, Nr. 4071, Ak. 17, p. 404)

³⁹⁹ According to Hartz/Cover (1988, p. 508) Leibniz develops a distinction between space and the extension of bodies. In particular, they support their reading by referring to a letter to de Volder from 1704, where Leibniz seemingly makes a distinction between the space and the extension of a "mathematical body". However, in whatever way this letter should be read, Leibniz's comment in *New Essays*, p. 127 precludes the reading Hartz/Cover suggest. When Leibniz (Fifth Reply to Clarke, G VII 398) says that a thing (*chose*) "keeps" its extension when it moves from place A to place B, he wants to say that the extension of the thing in B is congruent with the extension it had in A, not that the extension of the thing in B is another kind of extension than the extension of B.

⁴⁰⁰ See Hartz/Cover (1988, pp. 495-510) for a discussion of the development of Leibniz's distinction between the discreteness of bodies and the continuity of space, as well as the distinction between the extension and space of bodies, though with an interpretation of their significance, completely different from the one defended here.

⁴⁰¹ For a detailed discussion of the arguments for thinking that continuity as an a priori determination of sensibility, see De Risi (2007, pp. 405-16). For a defence of the alternative view that continuity is a sensible idea, see McRae (1995, pp. 182-3, 188).

⁴⁰² My translation, J.J. Adickes dates this note to 1769.

From this it follows that space is unique and singular, namely because a plurality of spaces is possible, only within the same unique, all-encompassing space. The relation to the very same all-encompassing space is what makes it possible for the body to appear as a centre of reference, from which the sensations are oriented in the direction of an object. It is in this sense that space is a law of sensibility, namely as a ground or form of the coordination of sensations and appearances, a form which cannot be reduced to a form of subordinating them under concepts of species and genera.⁴⁰³ Without the sensibility, which lets the things appear in space, there would be no situated things and therefore also no places.

The original concept of space is hence not the concept of place, but the concept of a condition of the form of appearances, which Kant now describes as a pure concept of intuition:

The form of the appearances depends merely on space and time, and these concepts arise from no senses or sensation, but from the nature of the mind, in accordance with which the different sensations can be represented under such relations. Thus, if all sensation of the senses is taken away, space and time is a pure concept of intuition [*ein reiner Begriff der Anschauung*]. And since everything in the experience, which can be known by the understanding alone, lies in the pure concept of intuition, it is a concept of understanding [*Verstandesbegriff*]. And although the appearances are empirical, it is still intellectual [*intellectual*].⁴⁰⁴ (*Reflexionen zur Metaphysik*, Nr. 3957, Ak. 17, p. 365)

In Kant's tentative and somewhat malleable terminology, the concept of space is also described as a concept of understanding. In other words, Kant is not making a clear-cut distinction between the original representation of space, which is a pure intuition and the concept of the originally represented space, a distinction that is more fully worked out in the Transcendental Aesthetic. However, in a note which Adickes dates to the same year (1769), Kant indirectly suggests that metaphysics only *searches* for a rational concept of space:

All concepts are either sensible or concepts of reason [*Vernunftbegriffe*]. The *first* are either of the sensation or of the appearance; these have the form of space and time as their ground. The *second* cannot be found through any analysis [*analysin*] of experience, though they coordinate all experience, and are pure concepts of reason, if no object of experience is thought through them; but if that is the case, then they are empirical concepts. E.g. a genus is a pure concept, but a stone in general or the genus of a stone is an empirical concept. (...) Space is not a concept of reason [*Vernunftbegriff*], but metaphysics searches for the rational concept [*Vernunftbegriff*] of it.⁴⁰⁵ (*Reflexionen zur Metaphysik*, Ak. 17, Nr. 3974, pp. 371-2)

Gone are the previous doubts about whether space should be considered as a condition (ground) for things (appearances) and their relations, rather than the other way around. In another note, which Erich Adickes dates to 1769 or 1770, Kant argues that the representation of the all-encompassing space is prior to the representation of its parts, much as Leibniz had argued. The outcome of this subtle change in Kant's position leads him to make the claim that space is a condition of all possible

⁴⁰³ The form of sensibility and the form (law) of understanding are thus distinguished along lines, which reflects Kant's new division between sensibility and the understanding.

⁴⁰⁴ My translation, J.J. Adickes dates this note to 1769.

⁴⁰⁵ My translation, J.J.

appearances.⁴⁰⁶ The later also leads him to the conclusion that nothing, except appearances, is connected in space:

One can think of spaces, only insofar as one cuts something out of the general space [*allgemeinen Raum*]. The space comes first, before the things; that is the reason why it is no predicate of things, but rather a law of the sensibility, which, as the condition of all possible appearances, admittedly comes before all the actual appearances.⁴⁰⁷ (*Reflexionen zur Metaphysik*, Nr. 4315, Ak. 17, pp. 503-4)

Even more importantly, this suggests that space is not, or does not, represent the order of coexistence of simple substances. In a note, which Adickes dates to the same time as the note discussed above, Kant expresses this claim in the following way:

The predicate of space and place does not apply to the substance, but rather to the sensible representation. Bodily parts are comparative substances, according to the laws of the sensibility and phenomenal substances.⁴⁰⁸ (*Reflexionen zur Metaphysik*, Nr. 4316, Ak. 17, p. 504)

Innocent as this might seem it actually challenges the doctrine of space Kant had officially defended in the 1740s and 1750s, where he had argued that simple substances are localised in space. Space is a space of sensible representations, not an abstract representation of the order of coexistence of the monads. So far as I can see there is no way of telling what prompted this shift in Kant's thinking, merely by considering his notes on Baumgarten's *Metaphysica*, from the late 1760s. We have to wait until the inaugural dissertation for an official statement of the motives behind his novel doctrine of space. However, to me it seems quite likely that the insight that space is continuous must have been what definitely settled the issue for Kant.

From the continuity of space, it follows that space is an analytic whole, i.e. a whole that is prior to its indeterminate parts. In Herder's lecture notes it was exactly this property which made space into a *totum ideale*, a pure composite of relations which is *impossible* without the support of a subject, namely the simple substances (physical monads), which are related in space.⁴⁰⁹ This makes perfect sense, *if* the concept of space is a concept of reflection abstracted from the relations of those physical monads, which ultimately makes it possible. However, with the investigation into the origin of the pure concept of space it became possible for Kant to abandon this view.

Space is not an *abstractum*, but rather originally given through pure intuition as a continuous whole. Note that this pure intuition does not just provide us with another, complementary route to the concept of space, but rather the only possible one. For even if we assume that we *also* have a concept of space, which is abstracted from the order of coexistence of the physical monads, this concept would not take us beyond the concept of an order of situations, which is exactly the point Kant tried to make in *Directions*. It would be the concept of an order of discretely repeated situations, but not the concept of a continuous space, such as ours.⁴¹⁰ Thus, only the continuity of space as a form of sensibility, in which the sensations and their directions are coordinated, explains why the phenomenal bodies are continuously extended and infinitely divisible. Phenomenal bodies

⁴⁰⁶ In a note dated 1769 or 1770, Kant qualifies this assertion by adding that space is "only" (*nur*) a condition for the appearance of outer things; see *Reflexionen zur Metaphysik*, Nr. 4191, Ak. 17, p. 451.

⁴⁰⁷ My translation, J.J.

⁴⁰⁸ My translation, J.J.

⁴⁰⁹ *Nachträge Herder*, Ak. 28, pp. 848-9; see also Chapter 3.

⁴¹⁰ Space as an order of discretely repeated situations would hence be not only qualitatively different, but also numerically different from our space, which is unique.

are not just confusedly perceived substantial composites of discrete simple substances, which means that there is no artificial limit to their divisibility.

Here it does not matter if we conceive these phenomena as substantial composites actually divided into a finite number of physical monads, as the young Kant did, or as actually divided into an infinity of monads as Leibniz does. The point is still that bodies are not actually divided substantial composites, which appears as indivisible phenomena in space. The continuity and hence the potential indivisibility of the phenomena is not a thin, subjective veneer smeared over them, but essential to their very being as phenomena.

Later in the critical period, Kant makes the same point, by trying to show that the concept of material bodies as substantial composites in space makes it possible to prove that they are both finitely and infinitely divided. The only way out of this antinomy is to recognise the phenomenality of the material bodies, which makes them continuous and potentially infinitely divisible, on a deeper-seated level, like the space which conditions them. Taken together with the solution to the antinomy between the finite and infinite extension of the world, this might throw additional light on Kant's re-evaluation of the ontological status of space, as Erdmann argues.⁴¹¹

Implicitly, the conclusion about the continuity and ideality of space also opens up the possibility that the rational soul might be immaterial, and yet present to a body, localised in the midst of the world. For if space is nothing but a condition of the appearance of the body, rather than the noumenal substance of the body, it can be argued that the substance of the body can act on the rational soul and its sensibility, without having to touch them. Conversely, the rational soul can be in contact with the body without having to occupy and fill a place in the body.

The notes on Baumgarten's *Metaphysica*, composed during the end of the 1760s, only intimates the contours of this coming doctrine, officially in Kant's inaugural dissertation in 1770. The main components of his doctrine are familiar: God is the *infinite* cause of the interaction of all simple substances, which makes them belong to the same world, one and the same *compositum substantiale*. The world is absolute, in the sense that it cannot be part of another whole:

It exists one world, that is, one whole, which is not a part of any actual (possible) whole. Its parts are not bound up with each other out of themselves. Because they are through *one* cause. Space is the *phenomenon* of the existence of all things through one [cause]. Infinity. The *commercium* of the substances are possible thereby. (...) The totality of the world and its state. It depends on the ultimate cause, but is not in *commercio* with it.⁴¹² (*Reflexionen zur Metaphysik*, Nr. 4086, Ak. 17, p. 409)

From now on Kant is going to argue that it is possible for the forces of the simple substances to interact in agreement with the theory of physical influx without making them localised in space. In the opposite case, i.e. if the simple substances are localised in space and God interacts with them, they would have to interact on the same plane, i.e. in space. It would then follow that some of God's properties are spatial or that there are two grounds of the coexistence and interaction of the simple things, namely both God and space. This is absurd for it entails that there are two necessary beings.⁴¹³ Thus, the concept of space and place applies only to the outer sensations and presumably also the appearances, not to God and the substances themselves. The advantage of this move is that there is no need for Kant to attribute any spatial properties to God, in order to explain how this

⁴¹¹ Erdmann (1884, p. xxxvi).

⁴¹² My translation, J.J. Adickes dates this note to 1769.

⁴¹³ *Reflexionen zur Metaphysik*, Nr. 6429, Ak. 18, p. 713.

interaction comes about. God is not locally present to the things, i.e. he is not a composite thing, and space is not the omnipresence of God, but the phenomenon of God's all-presence.

Finally, it follows that we can know the existence (*Daseyn*) of God only by our intellect, for we have no experience and no intellectual intuition of God, i.e. we cannot see how God is for himself.⁴¹⁴ God's existence must therefore be considered as a hypothesis, which is necessary to assume in order to explain the existence and the form of the world of phenomena.⁴¹⁵ This world of phenomena Kant now, in the late 1760s and early 1770s, refers to as the *sensible world*, a world that, however, is grounded in the *intelligible world* of causally interacting monads.⁴¹⁶ To follow the details of how Kant thinks that space, the intelligible world and God are connected, we have to turn our attention to his inaugural dissertation from 1770.

⁴¹⁴ *Reflexionen zur Metaphysik*, Nr. 4254, Ak. 17, p. 483.

⁴¹⁵ *Reflexionen zur Metaphysik*, Nr. 4108, Ak. 17, p. 418

⁴¹⁶ *Reflexionen zur Metaphysik*, Nr. 4254, Ak. 17, p. 483; *Reflexionen zur Metaphysik*, Nr. 4255, Ak. 17, p. 484; *Reflexionen zur Metaphysik*, Nr. 4349, Ak. 17, p. 516.

5. World, Space, and God: Kant's Inaugural Dissertation

The previous chapter dealt with Kant's development in the late 1760s and his attempt to explain the origin of the concept of space. In the chapter, I argued that Kant rejected not only Locke's view that space is a sense idea but also Leibniz's view that space is a concept of reflection abstracted from the places of simple substances. Instead, the concept of space originates from a pure intuition. I further argued that these considerations led Kant to suggest that space is an analytic whole, which is given prior to its parts. Space is in other words an ideal and continuous whole, and not just a whole of situations, abstracted from the situational relations of simple substances.

The purpose of this chapter is to show how this leads Kant to the radical, but also problematic suggestion that space is a whole in its own right, which is conceptually independent of the material bodies which fill it. Whereas bodies are synthetic wholes, which are posterior to their simple discrete parts, space is an analytic whole, which is prior to its composite continuous parts. What makes this suggestion problematic is that it seems to alienate space from the real world. Thus, like his predecessors, Leibniz, Wolff, Baumgarten and Knutzen, Kant conceived the world as a gigantic body and hence as a synthetic whole of simple substances, which is absolute, in the sense that it does not exist as a part of another whole. To the embarrassment of Kant, this seems to suggest that space is nothing but a figment of the mind, like the phantasms of Hobbes.

In the *Inaugural Dissertation* from 1770, Kant tries to anchor space to the world, by making it a condition of the appearance of the world in relation to the sensibility.⁴¹⁷ Interestingly the phenomenon of the world not only refers to the world, but also preserves some of its mereological properties, namely that it is an absolute whole, a whole which is not itself a part of another larger whole. However, unlike the world, the phenomenon of the world also shares some of the mereological properties of space, namely that it is continuous, prior to its indefinite parts and so on. Kant marks this by making a distinction between the sensible world and the intelligible world.⁴¹⁸

In his inaugural dissertation, Kant also tries to show that the space of the sensible world is the same original, subjective space, which he had detected in his investigation of the form of sensibility. Space is originally represented in a pure, a priori intuition, for it is presupposed in order to have an outer empirical intuition of an object and it does not subordinate them under itself but coordinates them within itself. Space is also transcendently ideal, for the alternatives to this claim are without exception absurd. Space is neither a substance in its own right, as Newton and Clarke argue, nor a relation between substances, as Leibniz argues. The former alternative is absurd for it entails that space is a whole of relations, which exist without the support of any relata. The latter alternative is absurd, for it makes Euclidean geometry contingently true.

Though Kant's arguments fail to refute Leibniz, they highlight that Kant makes a much stronger version of the transcendental ideality claim than Leibniz. Thus, for Kant the transcendental ideality of space entails that bodies and other phenomena are infinitely divisible, but never actually divided to infinity. There is hence no exact correspondence between phenomena and noumena, which grants that the situational order between external phenomena faithfully preserves the order of coexistence between the simple substances. More technically, if space is transcendently ideal, the situational

⁴¹⁷ *Inaugural dissertation*, §13, p. 391, Ak. 2, p. 399.

⁴¹⁸ On the interpretation defended here the intelligible world is the world; the noumenal world and the phenomenal world are hence not two representations of the same world ("set of objects"), as for instance Grier (2001, pp. 52-7) argues. Only the sensible world is a representation, namely of the intelligible world, which is ontologically independent of the sensible world.

order between external phenomena is not isomorphic with the order of coexistence of the simple substances.

In the *Inaugural Dissertation* Kant also takes a step back and considers the methodical errors of the thinkers who conceive space as transcendentally real. The spurious concepts of spatially located monads is a result of a systematic displacement of concepts from phenomena to noumena. Thinkers who displace concepts are victims of an illusion of the understanding, which depends on a failure to recognise the demarcation line between the sensibility and the understanding. However, Kant also embeds this claim in a much larger project, intimated already in the inaugural dissertation. Thus, in the 1770s Kant starts outlining a new science, a phenomenology, with two fundamental objectives: justifying the knowledge of space and time, determining the limits of our knowledge of space and time, and systematically exposing and removing all deceptive concepts that results from the transgression of these limits. Later, this idea would come to fruition, partly in the *Transcendental Aesthetic*, partly in the *Transcendental Dialectic*.

The disposition of the chapter is as follows. The *first section* introduces the reader to the distinction between the noumenal and the phenomenal world. The *second section* follows up this discussion, by presenting the official arguments for thinking that the original phenomenon of space is given in a pure intuition. The *third section* tries to reconstruct Kant's first official statement of his arguments for thinking that space is ideal, as he presents them in the *Inaugural Dissertation*. The *fourth section* connects these arguments with Kant's distinction between space and God, which lead to the more general issue of Kant's critique of metaphysics and its method, which is the topic of the *fifth section*. The *sixth section* finally, briefly examines Kant's development during the silent decade that preceded the writing of the *Critique of Pure Reason*.

5.1 Space and the Concept of the World

The end of the 1760s did not only mark a turning point in Kant's intellectual development, but also in his professional career. In 1770, Kant was appointed ordinary professor of logic and metaphysics at the University of Königsberg, which meant that he could leave his post as a librarian at the royal castle, a post that he had held since 1766. For his inauguration, as a professor, Kant had to compose a special, professorial dissertation, which was defended by his former student and friend Marcus Herz (1747-1803), who was invited from Berlin especially for the occasion.

The critical spirit of the *Inaugural Dissertation* comes to expression already in the first section (§ 1), which contains a kind of "pilot study" of how to derive the fundamental concepts of metaphysics from the cognitive faculties of the soul, in agreement with the plan Lambert had outlined in his letters to Kant.⁴¹⁹ Kant observes that the mind abstracts the pure concepts of understanding from laws (forms), which are inherent to it, by attending to its own acts.⁴²⁰ Kant does not present his readers with much detail, but presumably he thinks that the awareness of the act of thinking in accordance with a form of judgment provides the mind with certain pure concepts of understanding.

The awareness of thinking in accordance with, for instance, a categorical form of judgment provides the mind with the concepts subject and predicate. It also makes the mind conscious of

⁴¹⁹ *Inaugural Dissertation* § 1, p. 377, Ak. 2, p. 387.

⁴²⁰ *Inaugural Dissertation* § 8, pp. 387-8, Ak. 2, p. 395. The acquisition of the pure concepts of understanding corresponds to the "real use" (*usus realis*) of understanding, *Inaugural Dissertation* § 5, p. 385, Ak. 2, p. 393.

itself as the subject of all predicates (thoughts), without being the predicate of another subject.⁴²¹ However, from this it also follows that it has a concept of itself as a simple substance, for unless the mind is simple it cannot bring a plurality of representations to the unity of one thought.⁴²²

From the concept of the simple substance, the mind can also derive the concept of a composite substance, simply as the opposite of a simple substance.⁴²³ In thinking of a composite substance, the mind can think of it as a part of another composite substance, but ultimately it strives to think of a composite, which is not a part of another composite. The understanding hence generates the concept of an absolute synthetic whole, which is not a part of another whole – in other words a world.⁴²⁴ Conversely, the understanding generates a concept of the parts of the world, by a complete analysis in which it thinks away from everything composite in the world. In this way, it is possible for the understanding to demonstrate that the world ultimately must consist of a plurality of simple substances.⁴²⁵

The world is of course not an absolute whole because the mind thinks all simple substances together under the same concept, but because they are objectively connected with each other. The simple substances only provides the world with its *matter*, but in order for there to be a world the simple substances need to be coordinated, which is what gives the world its composition or *form*.⁴²⁶ Much in the same way as in the *New Elucidation*, Kant describes this coordination as the outcome of forces, which are internal but still transeunt, in the sense that they make the simple substances act and interact with each other. Kant also repeats his earlier, pre-critical claim that simple substances do not interact merely because they subsist, which means that an interaction does not occur unless there is a principle, which makes their mutual influence possible:

But the connection, which constitutes the *essential* form of a world, is seen as the principle of the *possible influences* of the substances which constitute the world. For actual influences do not belong to the essence but to the state, and the transeunt forces themselves, which are the causes of the influences, suppose some principle by which it may be possible that the states of the several things, the subsistence of each of which is nonetheless independent of that of the others, should be mutually related to one another as states determined by a ground. (*Inaugural Dissertation* § 2, p. 381, Ak. 2, p. 391)

Here Kant gives no details, as to the nature of the principle or cause, which brings the simple substances into coexistence. However, somewhat later in the dissertation, Kant repeats his familiar thesis that the possibility of an interaction between the simple substances depends on God, as their single cause. Only God can bring the simple substances together within the unity of a world, in

⁴²¹ Kant seems to argue along these lines a couple of years later, according to the lecture notes compiled by Pölitiz, in *Metaphysik L_I*, Ak. 28, pp. 225-6, 266.

⁴²² *Metaphysik L_I*, Ak. 28, pp. 226, 266-7. It goes without saying that Kant rejects this “deduction” of the concept of substance in the Transcendental Analytic and in the Transcendental Dialectic, since it is based on a misplacement of the concept of a substance in time to the thinking I, which results in the illusory inference (paralogism) that the thinking I is a simple, permanent substance. For a discussion of the Pölitiz lectures, as an authentic account of Kant's 1770s thoughts about substantiality of the thinking I, see Grier (2001, p. 148).

⁴²³ *Inaugural Dissertation* § 8, p. 388, Ak. 2, p. 395

⁴²⁴ *Inaugural Dissertation* § 1, pp. 377-8, Ak. 2, p. 387.

⁴²⁵ Cf. *Physical Monadology*, p. 53, Ak. 1, p. 477.

⁴²⁶ *Inaugural Dissertation* § 2, pp. 380-1, Ak. 2, pp. 389-90.

which the states of the individual simple substances reciprocally depend on each other, in accordance with the theory of physical influx.⁴²⁷

With this said, Kant also observes that our intellect cannot have an intuition of what it thinks under the concept of a composite, without relying on the sensible faculty.⁴²⁸ In representing a composite as it appears in relation to our sensibility, our understanding proceeds analytically from outer sensations of parts to intuitions of larger composites, by successively adding the parts to each other.⁴²⁹ In a similar fashion, our understanding proceeds synthetically from outer sensations of given compounds to intuitions of their parts, by successively dividing them. In both cases, the activity takes an unlimited time, Kant argues, making it into an incomplete, mathematically infinite process, which the understanding cannot complete.⁴³⁰ Hence, when we represent a composite thing by our sensible faculty this thing is not adequate to the pure concept of the intellect, which is nothing less than a synthetic composite.⁴³¹

The generation of a concept of a composite, in relation to our sensibility, is therefore different from how it is generated in the understanding. In Kant's terminology, our sensibility cannot "follow up" (*exsequi*) the concept that the understanding has of the world, which means that it fails to represent all the simple parts in a "distinct intuition".⁴³²

Though Kant has repeatedly been criticised for making the mistake of concluding objective impossibility (*ignoratio enlenchi*) from subjective impossibility, it seems to me as if the order of dependency is the exact opposite.⁴³³ Thus, the fact that the understanding is unable to finish the synthesis/analysis of the composites given to it from the sensibility, originates from objective peculiarities of these composites, according to Kant. The distinction between the representation of the world in the intellect and in the sensibility is therefore not just a distinction between two kinds of representations – concepts and intuitions –, but at the bottom a distinction between two kinds of wholes: one discrete and synthetic, and the other continuous and analytic.

From these considerations, Kant concludes that we can make sense of the phenomenon of the world, only by conceiving it as a world in its own right.⁴³⁴ Thus, we must make a distinction between two worlds: the noumenal world and the phenomenal world, which are numerically different not just with respect to their matter, but also with respect to their forms.⁴³⁵ Thus, the *matter* of the sense representations is not the monads, but the *sensations*, which result from the modification of the sensibility by "some object", presumably the monads.⁴³⁶ The matter of the phenomenal world is hence not the matter of the noumenal world, for appearances, like the computer screen in front of me, are not composed out of monads, but sensations (or that which corresponds to sensations), insofar as they are referred outside me.

Likewise, the *form* of the phenomenal world does not arise from the coordination of simple substances, but from the *coordination of sensations* as either simultaneous or successive.⁴³⁷ Thus,

⁴²⁷ *Inaugural Dissertation* §§ 17-18, p. 402, Ak. 2, pp. 407-8.

⁴²⁸ *Inaugural Dissertation* § 1, p. 377, Ak. 2, p. 387.

⁴²⁹ *Inaugural Dissertation* § 1, p. 378, Ak. 2, p. 387.

⁴³⁰ *Inaugural Dissertation* § 1, p. 377, Ak. 2, p. 387.

⁴³¹ *Inaugural Dissertation* § 1, p. 377, Ak. 2, p. 387. The use of the pure concepts of understanding must therefore also be "elencic", i.e. used negatively, in such fashion as to keep the noumena distinct from the phenomena; *Inaugural Dissertation* § 9, p. 388, Ak. 2, pp. 395-6.

⁴³² *Inaugural Dissertation* § 1, p. 377, Ak. 2, p. 387.

⁴³³ E.g. Kemp Smith (1999, p. 485); for similar considerations Guyer (1987, pp. 407-11).

⁴³⁴ *Inaugural Dissertation* § 13, p. 391, Ak. 2, p. 398.

⁴³⁵ *Inaugural Dissertation* § 13, p. 391, Ak. 2, p. 398.

⁴³⁶ *Inaugural Dissertation* § 4, p. 384-5, Ak. 2, p. 392-3.

⁴³⁷ *Inaugural Dissertation* § 4, p. 384-5, Ak. 2, p. 392-3.

whereas understanding subordinates sensations to concepts, the sensibility coordinates the given directions of the sensations in space, which is the law of the sensibility.⁴³⁸ Space is therefore, Kant is going to argue, not a universal under which the understanding subordinates the objects, as under a common genus. Rather, it is the principle of that order (“form”), within which sensations are coordinated in the direction of a singular object. Thus, the concept of space is the concept of that principle, which is a pure concept, not an empirical concept.⁴³⁹ However, the concept of space is still different from the pure concepts of understanding, which the understanding extracts from its own laws.

5.2 Geometry and the Exposition of the Concept of Space

Kant's discussion of the origin and validity of the concept of space is presented in § 15. In many ways this “proto-exposition” resembles the Metaphysical and Transcendental Expositions of the concept of space, Kant was going to present about ten years later, in the Transcendental Aesthetic. In *Directions* Kant had concluded that space is a “fundamental concept”; now he explains that the representation or concept of space “contains” or “is” the form of sensory intuition, namely the condition under which it becomes possible to distinguish the appearances (“sensible things”), and represent them clearly and distinctly.⁴⁴⁰ Kant presents a number of arguments for this claim in the *Inaugural Dissertation*.

Firstly, the concept of space is a priori, for it is not an empirical concept of reflection, abstracted from outer sensations. Kant's argument here is not just that space cannot be derived by abstracting from everything in the bodies I see or touch, except their extension or place, but that the very possibility of seeing or touching an outer body depends on the representation of space. Thus, in order to represent an outer thing in the first place I need to have an outer sensation of it, which presupposes that I represent the thing at a distance from my body. Distances are, however, determinations of space as a whole, within which sensations can be oriented at a definite direction from our body, for instance to the right, to the left, etc. The very possibility of having an outer sensation of a thing outside me therefore presupposes the representation (“concept”) of space:

The concept of space is not abstracted from outer sensations [sensationibus externis]. For I may only conceive of something as placed outside me by representing it as in a place which is different from the place in which I am myself; and I may only conceive of things outside one another by locating them in

⁴³⁸ Paulsen (1875, p. 104) suggests that the laws of sensibility are the forms of the sensible representations. However, to me it seems more correct to say that they are the ground of these forms, for in *Inaugural Dissertation* “form” is generally taken to be a term, which stands for the way matters are related to each other, not the condition under which such a relation is possible.

⁴³⁹ *Inaugural Dissertation* § 4, pp. 384-5, Ak. 2, p. 392-3. Kant's terminology may suggest that the principle of sensibility is the ground, in accordance with which outer appearances are actively coordinated, rather than given as coordinated. To me it seems as if this ambiguity has its origin in Kant's not perfectly worked out distinction between sensibility as sense, and sensibility as the faculty of intuition, which actively orders, or rather, re-orders the sensations, so that they can be taken up by the understanding. Falkenstein (2004, pp. 48-50, 91) even argues that space itself becomes a product of sensibility, in the inaugural dissertation. Though there is evidence for this “forms-as-mechanism” reading, I think that Kant just emphasizes that space is a ground of the active ordering of sensations, in the faculty of intuition (imagination). Unfortunately, this makes it easy to overlook that space is the ground of the order, within which sensations and outer appearances originally are *given* to sensibility.

⁴⁴⁰ *Inaugural Dissertation* § 15, p. 396, Ak. 2, p. 403.

different places in space. The possibility, therefore, of outer perceptions [*perceptionum externarum*] as such *presupposes* the concept of space; it does not *create* it. Likewise, too, things which are in space affect the senses, but space itself cannot be derived from the senses. (*Inaugural Dissertation* § 15, p. 395, Ak. 2, p. 402)

Secondly, Kant claims that the concept of space is a singular representation, and not a general concept of reflection, for in that case particular spaces would be contained in space, which they are not:

The concept of space is a singular representation embracing all things *within itself*; it is not an abstract common concept [*notio abstracta et communis*] containing them *under itself*. For what you speak of as *several places* are only parts of the same boundless [*immensi*] space related to one another by a fixed position. (*Inaugural Dissertation* § 15, p. 396, Ak. 2, p. 402)

Typical of the singular objects is that they are *subordinated* to universal concepts of species and general, by virtue of their marks. The triangle is subordinated to the universal concept of a polygon, for three lines cannot form a triangle unless they are enclosing a space. The same property cannot, however, explain why the triangle is related to space, for the property of enclosing a space already presupposes that the sides of the triangle are coordinated with each other *in* one and the same mathematically infinite space.⁴⁴¹

The representation of different geometric objects as well as sensible objects, such as a pencil, a desk, etc., thus presupposes the representation of different places, which means that they do not obey Leibniz's principle of the identity of indiscernibles. This explains why the relation between objects and concepts is different from the relation between objects and space, for the objects are related to space not because they are subordinated to it, but because they are coordinated with each other *within* space. The representation of space is hence singular and not universal.

From the apriority claim and the singularity claim Kant concludes that the original representation of space must be a pure intuition, which he still describes as an a priori singular concept:

The concept of space is thus a pure intuition, for it is a singular concept, not one which has been compounded from sensations, although it is the fundamental form of all outer sensation. Indeed, this pure intuition can easily be seen in the axioms of geometry, and in any mental construction of postulates, even of problems. (*Inaugural Dissertation* § 15, p. 396, Ak. 2, p. 402)

Kant supports the claim that the representation of space is a pure intuition, by a proto-version of the Transcendental Exposition, according to which the postulates of Euclidean geometry ("axioms of geometry") depend on a pure intuition of space. For instance, the truth of Euclid's first postulate, according to which a straight line can be drawn joining any two points, cannot be demonstrated merely from a concept, like the concept of a set of points, or even an ordered set of points. Instead, it is immediately apprehended, by drawing a straight line between any two points in space.⁴⁴²

⁴⁴¹ *Inaugural Dissertation* § 15, p. 396, Ak. 2, pp. 402-3. The *unity* which space gives to the sensations makes them into a whole, but not an absolute whole comprising all parts, but a continuous, mathematically infinite whole. The limit of the sensible world can always be transcended and moved, like the phenomenal, perceptual space which encloses it. The horizon towards which the sailor gazes is always ahead of him, in perpetual motion like the vessel he is sailing.

⁴⁴² *Inaugural Dissertation* § 15, p. 396, Ak. 2, p. 403.

According to Euclid's second postulate, this line can be drawn potentially to infinity, but only within the horizon of an all-encompassing space, which means that it is a determination of something as a priori and singular, as the constructed line itself. Kant expresses this, by saying that the pure intuition of space is "seen in the axioms of geometry".⁴⁴³

Likewise, it is impossible to determine the direction (*plagam*) of a place or the difference between incongruent counterparts, such as a left hand and a right hand, merely by virtue of the absolutely inner marks that can be thought under intellectual concepts.⁴⁴⁴ We can only apprehend differences, such as the difference between the left and the right hand, if we have a (determinate) pure intuition of the distance between them. Hence, geometrical demonstrations cannot follow from concepts alone:

It is, therefore, clear that in these cases the difference, namely, the incongruity can only be apprehended by a certain pure intuition. (...) For, since geometry contemplates *relations of space* and since the concept of space contains within itself the very form of all sensory intuition, nothing can be clear and distinct in things perceived by outer sense unless it be by the mediation of the same intuition, the contemplation of which is the function of the science of geometry. But geometry does not demonstrate its own universal propositions by thinking an object through a universal concept, as happens in the case of what is rational; it does so, rather, by placing it before the eyes by means of a singular intuition, as happens in the case of what is sensitive. (*Inaugural Dissertation* § 15, pp. 396-7, Ak. 2, p. 404)

Space is the ground of the places of the objects, e.g. the left and the right hand, which makes the sensory intuitions of the objects sufficiently clear, so that they can be distinguished from each other at a distance. Demonstrations in Euclidean geometry do not follow from an analysis of the concept of an order of situations or points, abstracted from the order of coexistence of simple substances, a view that Kant ascribes to Leibniz. Instead, they follow from constructions within an all-encompassing and continuous space, which shows that space is an ideal whole, not an order of situated simple substances. To this argument I now turn.

5.3 Euclidean Geometry and the Transcendental Ideality of Space

In the remaining sections of § 15 Kant publicly declares, for the first time in his career, that space is not objective and real, but subjective and ideal. Thus, in the same way as § 15 presents the readers a kind of proto-version of the exposition of the concept of space, it also contains a proto-version of the transcendental ideality claim.

However, in the *Inaugural Dissertation* Kant does not let the transcendental ideality claim follow as a direct conclusion from the exposition of the concept of space, as in the *Critique of Pure Reason*. Rather it follows as an indirect conclusion from a refutation of the competing claim that space is a substance, not an accident of substance or a relation between substances:

⁴⁴³ That space has three dimensions is also an axiom, according to Kant, which depends on the impossibility of constructing more than three lines, which intersect a given point at right angles. Kant does not develop this argument in detail, but a similar version of the argument reconstructed above can be found in *Prolegomena*, Ak. 4, p. 284.

⁴⁴⁴ *Inaugural Dissertation* § 15, p. 396, Ak. 2, p. 403.

Space is not something objective and real [obiectivi et realis], nor is it a substance, nor an accident, nor a relation; it is, rather, subjective and ideal; it issues from the nature of the mind in accordance with a stable law as a scheme, so to speak, for co-ordinating everything which is sensed externally. Those who defend the reality of space either conceive it as an absolute and boundless receptacle of possible things – an opinion which favour with most geometers, following the English – or they contend that it is the relation [relationem] itself which obtains between existing things, and which vanishes entirely when the things are taken away, and which can only be thought as being between actual things – an opinion which most of our own people, following Leibniz maintain. (Inaugural Dissertation § 15, p. 397, Ak. 2, pp. 403-4)

Kant begins his defence of the transcendental ideality claim by attacking the notion of space as a substance. This notion is flawed according to Kant, for it makes space into a receptacle or container of possible things. It entails that it is possible for space to exist even if it is empty and hence consists of nothing but relations between possible things. The latter is absurd, for it makes space into a whole of spatial relations, which exists apart from the existence of any spatially related things. The ideal space of relations is turned on its head and reified into a substance, which belongs to the world of fables.

We are in no better position if we make space an accident of God, as Newton and Clarke had argued. This concept of space is a subreptic concept, which arises when our understanding confusedly takes God's omnipresence to be local and not virtual.⁴⁴⁵ It is a concept no less fantastic and illusory than the concept of space as a substance. Thinkers who make this mistake are victims of the same illusion as Swedenborg, who once thought that God has a place, not just in the sun of the intelligible world, but in the sun of the phenomenal world as well.⁴⁴⁶ In brief, space is not the sensorium of God, but the sensorium of man.⁴⁴⁷

Kant continues his defence of the transcendental ideality claim by attacking the notion of space as relation between substances – a notion, which he attributes to Leibniz. Here Kant uses an argument, which he now presents in public form, for the first time. On this argument, we have to reject relationalism, because it endangers the status of Euclidean geometry as a science:

The proponents of the second view, however, are in headlong conflict with the phenomena themselves, and with the most faithful interpreter of all phenomena, geometry. For, without mentioning the obvious circle in the definition of space in which they are necessarily entangled, they cast geometry down from the summit of certainty, and thrust it back into the rank of those sciences of which the principles are empirical. For if all the properties [*affectiones*] of space are merely borrowed by experience from outer relations, then there would only be comparative universality such as is obtained by induction, that is to say, such as extends no further than observation. Nor would the axioms of geometry possess any necessity apart from that which was in accordance with the established laws of nature, nor any precision apart from that which was arbitrarily constructed. (*Inaugural Dissertation* § 15, pp. 397-8, Ak. 2, p. 404)

⁴⁴⁵ I will discuss the subreptic concepts in some closer detail in section 5.5.

⁴⁴⁶ In *On the Intercourse between the Soul and the Body*, p. 10, Swedenborg metaphorically describes the love, which is present everywhere in the intelligible, spiritual world, as a sun, and God's presence in this love as a place in the sun. However, in an earlier stage of his career Swedenborg even played with the idea that God, literary, might have a place in the sun, in the midst of the solar system; see Martin Lamm (1987, pp. 32-3).

⁴⁴⁷ In *Inaugural Dissertation* Kant fails to present any details of his views on Newton's theory of space, but it is quite clear that he associated it with the idea that space is a property of God, namely the sensorium of the omnipresence of God. See for instance *Reflexionen zur Metaphysik*, Nr. 4145, Ak. 17, p. 432.

What Kant claims here is that relationalism makes knowledge of the properties of space rely on experience of “outer relations”, i.e. the places of material bodies. One way of making sense of this claim is to consider it against the background of Euler’s critique of the Leibnizian “metaphysicians”, who failed to derive anything but a concept of situation or place when they reflected on what bodies have in common, in abstraction from everything that belongs to them merely as bodies. The properties, which make space more than just a place but a whole of continuously diffused places, is lost in the act of abstraction. In the heads of the metaphysicians, geometric space and physical space are torn apart by a gigantic rift, which only physical geometry can bridge.

The problem with this divorce is that it isolates the postulates of Euclidean geometry not only from the physical space but from the land of truth as well. Hence, given that Kant’s understanding of Leibniz is correct, there is nothing in an order of coexisting things which necessarily makes it into a Euclidean space. Contrary to what Leibniz believes, according to Kant, the postulates of Euclidean geometry can make no claims to truth on their own merits, as if they were true by themselves. They are true only because they refer to the existence or real possibility of an object outside themselves, a straight line, a circle, a right angle, etc.⁴⁴⁸ The first postulate for instance, refers to the unique, shortest curve between any pair of points, by postulating the possibility of drawing a straight line between them.

However, curves are nothing but idealised distances in physical space, which means that the first postulate ultimately asserts that we can describe the unique shortest distances between any two places in physical space as a straight line. But since our knowledge of Euclidean space extends no further than the measurement instruments and calculations of the physical geometers, we cannot postulate that it is possible to draw a straight line between any two points, as Euclidean geometry demands. Nothing even guarantees that the physical space is everywhere continuous, which undermines all demonstrations in Euclidean geometry, which everywhere presuppose the existence (real possibility) of points of intersections between, say, circles, or circles and lines, which in turn presuppose the continuity of these constructed circles and lines.⁴⁴⁹ The Leibnizian concept of space, as a universal place, abstracts not only from the continuity of space but also from that which makes the postulates and demonstrations of Euclidean geometry universal and necessary.

On Kant’s interpretation the metaphysicians cannot bridge the gap between their space and the space of the geometers, unless they recognise that the representation of space is a pure intuition, which is exactly the purpose of the proto-expositions presented in § 15. That the postulates are certain and universally valid follows, because they presuppose the pure intuition of space, which is a necessary condition of the external perceptions and phenomena. The first postulate is true, because the external phenomena will not appear except in a space, which is Euclidean. Moving bodies, which follow the shortest path from one place to another, will not appear to us, unless they

⁴⁴⁸ E.g. Heath (1956, pp. 234-7) commonly uses the term “existence” with respect to postulated points, lines, etc., in his commentary on Euclid’s *Elementa*. Thus on Heath’s interpretation, constructions prove the existence of geometric objects, like lines and circles, which the postulates postulate to be possible. However, to be exact existence belongs only to something, which has a determinate position in time, according to Kant, which mathematical objects do not have. Instead, it is more correct to speak about points, lines, etc. as real possibilities, as for instance Brittan (1978, pp. 60-67) argues. For a critique of this view, see Plaass (1994, p. 258), who argues that mathematical objects merely involves possibility, not the possibility of existence, i.e. real possibility.

⁴⁴⁹ See Heath (1956, pp. 234-7) for a detailed discussion of the “principle of continuity” as a presupposition for the demonstrations in Euclidean geometry, for instance the first proposition, which asserts the possibility of constructing an equilateral triangle on any given, finite straight line.

move along a straight line. Thus, what Kant suggests is that we can recover the universal necessary truth of the postulates, once we recognise their truths as transcendental truths.

None of these arguments seems decisive for Leibniz, however, simply because there is no major disagreement between him and Kant. Space is not objective and real, but rather transcendently ideal, as a form of the monads' confused perceptions of their bodies as extended and situated with respect to the bodies of other monads. Space is hence real only as the space of external phenomena, i.e. the extended organic bodies of the monads. This means that the monads are situated in space, but only indirectly, by virtue of their presence to their organic bodies.

Leibniz could therefore argue that Kant's arguments are irrelevant for his philosophy of space and geometry. If they are valid, they apply only to the arguments of the physical monadologists, like the young Kant. Furthermore, Leibniz could also ask for more detailed information as to the reasons why the axioms of Euclidean geometry, like the first postulate, are transcendental truths, according to Kant. From Leibniz's point of view Kant seems to move too quickly from the premise that space is an a priori necessary condition for Euclidean geometric constructions, to the conclusion that space is Euclidean. Thus, taken as an abstract order of simultaneous situations it is perfectly possible for space to be spherical or hyperbolical, rather than Euclidean.

However, what decides the matter in favour of thinking that space is Euclidean, according to Leibniz, is that the extension of space arises from the same kind of synthesis, which is involved in the confused perception of bodies as extended. The space of extended phenomena is therefore a Euclidean space, produced by the imagination in accordance with the postulates of Euclidean geometry. For instance, the straight line, which figures in Euclid's first postulate, is not only the shortest curve between two points, but also the simplest and most self-similar curve and hence the most determinate way of synthesising a one-dimensional manifold of points.⁴⁵⁰ The latter is also the reason why our imagination follows a Euclidean, rather than non-Euclidean geometry, when it synthesises a manifold of situations, within the unity of a curve.⁴⁵¹

Valid or not, Leibniz's arguments for the transcendental truth of the postulates of Euclidean geometry, certainly point out a weak spot in Kant's justification of Euclidean geometry. The hypothetical necessity, which is granted to geometry if space is considered as a condition of outer intuitions, rather than as a relation between things (monads, physical monads etc.), does not presuppose that this geometry is Euclidean. However, with this said, it is clear that Kant would still have rejected Leibniz's philosophy of space. For according to Leibniz external phenomena in space still consist of an infinity of monads, as their simple parts, making bodies and other external phenomena not just potentially, but actually divided to infinity. Ultimately, the entire phenomenal world is actually divided to infinity and of infinite magnitude, according to Leibniz.

For Kant on the other hand, the infinite divisibility and infinite extension of the phenomenal world is truly potential, not actual. Phenomena are actually divided to infinity only if there is a perfect, one-to-one correspondence between phenomena and noumena. However, because of the transcendental ideality of space, no such one-to-one correspondence is ever present, not even as the ideal limit of a perfectly distinct perception of the noumena. There is hence no isomorphic correspondence between phenomena and noumena, i.e. no perfect one-to-one correspondence (mapping) between phenomena and noumena, which grants that the situational order between phenomena faithfully preserves the order of coexistence between the noumena. Hence, the continuity and potential infinity of the phenomena is not just a subjective perception of an actually

⁴⁵⁰ See, De Risi (2007, pp. 238-9).

⁴⁵¹ For a detailed discussion of the transcendental truth of Euclidean geometry and how it is connected with the transcendental determination of the imagination, see De Risi (2007, pp. 420-28).

discrete and infinite (or finite) manifold. Space and the potential infinity of its parts penetrates the world of phenomena in its entirety – from its innermost depths to its outmost boundaries. As will be seen (Chapter 6), this aspect of Kant's transcendental ideality claim and his phenomenology is going to be decisive for his solution to the mathematical antinomies of Leibnizian cosmology.

To summarise, the transcendental ideality claim and hence the demarcation line between the phenomenal and the noumenal world, can be established independently of an argument from metaphysics. The universal validity and necessity of Euclidean geometry shows that space is a law of sensibility, which conditions the phenomena and makes them belong to the physical space, which is the space of the sensible world. Furthermore, without space there would be no phenomena and more precisely no world of phenomena, for space is that which brings the phenomena together, without which they would not coexist. Thus, space constitutes the principle of the phenomenal world because it is essentially a singular, unique (*unicum*) and absolute whole (*totus*), which cannot be part of another whole.⁴⁵²

5.4 God and the Ideality of Space

In the subsequent sections (§§ 16-22), Kant looks at the question of the transcendental ideality of space and time, from a different point of view. The ideality and subjectivity of space and time also follows from the knowledge of the principles of the form of the intelligible world.⁴⁵³ Merely from the concept of God, as the principle of the coexistence of the substances “in” the intelligible world, it follows that God is virtually, not locally present to these substances. Space is, however, locally present to its contents, from which it follows that space cannot be identical with the omnipresence of God. Space is, in other words, distinct from the transcendental reality of God, which just goes to say that space is not the sensorium of God, as Kant argued above.

Once again Kant repeats the contention stated in § 13, namely that the principle of the form of the intelligible world is the principle according to which the coexistence and connection (“interaction”) between ontologically independent simple substances is possible. We cannot answer this question by considering the nature of the matter of the world, i.e. the nature of the simple substances:

We are not here contemplating the world in respect of its matter, that is to say, in respect of the natures of the substances of which it consists, whether they are material or immaterial. We are contemplating the world in respect of its form, that is to say, in respect of how, in general, a connection between a plurality of substances comes to be, and how a totality between them is brought about. (*Inaugural Dissertation* §16, p. 401, Ak. 2, p. 407)

In all, this passage seems to be perfectly consistent with Beiser's reading of the *Inaugural Dissertation*, according to which the *Inaugural Dissertation* “does not speculate about distinct kind of entities, but simply determines the necessary laws by which our reason can think of any object whatsoever.”⁴⁵⁴ The self-assurance with which Kant presents his transcendental ideality claim in § 15, but also in § 16, is, however, proof of the opposite, I think.

⁴⁵² *Inaugural Dissertation*, pp. 398, Ak. 2, p. 405.

⁴⁵³ I will discuss the details of this argument somewhat closer below.

⁴⁵⁴ Beiser (1999, p. 49).

First of all Kant asserts that the intelligible world consists of substances, which contradicts Beiser's claim that noumena "are not a type of existing thing, but simply the forms or structures to which any existing or possible thing must conform."⁴⁵⁵ Secondly, although Kant denies that the question of the form of the intelligible world needs to take the nature of the interacting substances into consideration, it is quite clear that he takes them to be *immaterial*, for if they were material they would have to exist in space.⁴⁵⁶ However, it is true that this leaves it undetermined whether the substances are spiritual or not; the intelligible world might be a spiritual world, proceeding from the "pure love"⁴⁵⁷ of God, in the very midst of the world, as Swedenborg once had claimed, but that cannot be known.

In the subsequent section (§ 17) Kant explains that the interaction of simple substances, which constitute the parts of the composite substances, does not come about merely because they exist.⁴⁵⁸ Simple substances do not interact, unless they coexist, but they do not coexist, merely because they subsist.⁴⁵⁹ Kant then explains that although simple substances are ontologically independent of each other, their existence is not necessary (§§ 18-20).

From this it follows that the noumenal world consists of contingent substances, which depend on some other, necessary substance for their existence – namely God (§§ 19-20).⁴⁶⁰ God is the ultimate ground of the reality of the intelligible world, and the principle under which the coexistence and interaction between the simple substances is possible. From the latter it also follows that God is the ultimate ground under which knowledge of the sensible world is possible, for the substances cannot produce the sensations that occur in our minds, unless they interact and are connected in God.

The latter contention does not come over as particularly original or controversial against the background of Kant's familiar claim (e.g. *New Elucidation*), that God alone is the cause of the existence of the simple substances and their connectedness.⁴⁶¹ The novelty of this claim is that it opens up the possibility of explaining our sensations as the outcome of an interaction between our soul and a substance, which is not phenomenal. Thus, in the final analysis, it is not the material bodies, but only the noumenal substrate of our bodies, which affects the sensibility and makes it produce sensations. Making the material bodies into infinite complexes of physical monads isolated from the life activities of the mind just forces us to let God enter the equation, in order to bridge the gap between the material and the spiritual.

Kant's discussion of God as the principle of the form of the noumenal world is hence not only relevant to see how it fits into his earlier attempts to explain the unity of the world but also to

⁴⁵⁵ Beiser (1999, p. 49).

⁴⁵⁶ Cf. *Inaugural Dissertation* § 13, p. 391, Ak. 2, p. 398.

⁴⁵⁷ Swedenborg, *The Intercourse between the Soul and the Body*, p.10.

⁴⁵⁸ *Inaugural Dissertation*, § 17, p. 402, Ak. 2, p. 407.

⁴⁵⁹ As we have seen, Kant intimates this already in § 2 and § 13, when he speaks about the principle of possible influences and the principle of the form of the intelligible world, though without explicitly mentioning that this principle is God.

⁴⁶⁰ To me it seems quite clear that the order of dependence goes from the common cause of all simple substances (God) to their mutual interaction and connection, not the other way around as Gattermann (1899, p. 9) claims.

⁴⁶¹ Paulsen (1875, p. 111) emphasises, correctly, that the concept of interaction leads to the concept of God, and thus to the concept of infinite reality, according to Kant. The latter suggests an analogy between space and God, not only because both space and God are omnipresent, but also because both God and space are infinite. In this sense, space can be conceived under the concept of infinity, which is a pure intellectual concept. The infinity of space is, however, an idea that cannot originate from anything except a pure intuition, i.e. not from the real use of the intellect. The concept of space, which metaphysics searches for is pure, in the sense that there is nothing empirical mixed in it. However, this does not mean that there is something in it, which originates from sources "outside" the intellect, and which is revealed in the exposition of the concept, as Kant will go on to argue in the *Transcendental Aesthetic* (see Chapter 6).

understand his metaphysical arguments for the transcendental ideality of space. Thus, according to Kant God's existence as a necessary substance makes it impossible for him to interact with contingent substances, which means that he exists as a cause detached from the world (*extramundum*), and not "in" the world. God is hence not locally, but virtually present to the contingent substances whose existence he upholds. Space is neither a property of God nor a relation between monads, and in this sense space is ideal.

Space brings, however, testimony to God's omnipresence and immensity, for God is the principle under which relations are possible in the first place; space derives its reality from God, as Leibniz would express it. Hence, though space is not identical with God's inwardly presence to all things, we are still entitled to describe space as the *appearance* of God's omnipresence:

Hence, the mind only senses external things in virtue of the presence of the same common sustaining cause. Accordingly, space, which is the sensitively cognised universal and necessary condition of the co-presence of things, can be called PHENOMENAL OMNIPRESENCE. (For the cause of the universe is not present to each and every thing simply in virtue of the fact that that cause is in the places they are.⁴⁶² It is rather the case that places exist, that is to say, that relations of substances are possible, because the cause of the universe is inwardly present [*intime praesens*] to all things.) (*Inaugural Dissertation* § 22, Scholium, pp. 404-5, Ak. 2, pp. 409-10)

We see all things in space, not in God for God is virtually, not locally present to the monads he brings together. This is the very opposite of the view that God is present to all the things in the universe, because he occupies the same place as them. God is virtually, not locally, present to all things in the noumenal world, and this "inner" presence is the foundation of space as a phenomenon. Space is not just a phenomenon, but also an appearance of God's omnipresence.

Hence, though Kant firmly rejects Malebranche's occasionalism, he admits that there is a kind of paradoxical affinity between his view and Malebranche's view, for it is exactly because we see all things in space, and not in God that we cognise all things in the appearance of God's omnipresence:

However, it seems more advisable to keep close to the shore of the cognitions granted to us by the modest character of our understanding, rather than put out into the deep sea of such mystical investigations as Malebranche did. His view, the view *namely that we intuit all things in God*, is very close indeed to the one which is expounded here. (*Inaugural Dissertation*, § 22, Scholium, p. 405, Ak. 2, p. 410)

From the Scholium of § 22 it follows indirectly that space is only a condition of the interaction of phenomenal substances, not the interaction of noumenal substances. The soul merely interacts with the noumenal substrate of the phenomenal body, which gives the soul its point of view, because they are brought together in the presence of God. The harmony between the states of the soul, and the states of its body, is not pre-established by God from the outset of the creation, as Leibniz claims, but is the result of an interaction, which is possible since it does not have to occur in space.

⁴⁶² Kant does not directly mention God in this sentence, but God is of course what Kant indirectly refers to here, namely as the "cause of the universe".

5.5 The Subreptic Axioms and the Method of Metaphysics

In the subsequent sections (§§ 23-30) Kant diagnoses the source of the errors made by the philosophers who ignore the demarcation line between sensibility and understanding and fail to recognise the transcendental ideality of space and time. Their mistakes are not a mere coincidence Kant argues, but an outcome of their flawed method. Their error shows itself in the way they first derive (*usus realis*) and then apply (*usus logicus*) their concepts and principles.⁴⁶³ The outcome is that they often transgress the demarcation line between the principles of sensibility and the principles of understanding.⁴⁶⁴

Thus, the principles of sensible cognition, i.e. space and time, spuriously present themselves as principles of intellectual cognition.⁴⁶⁵ Entire clusters of predicate concepts, which originate from the principles of sensible cognition, migrate from the world of phenomena to the world of noumena. When these predicate concepts (place, continuity, infinity, etc.) merge with the subject concepts of intelligible objects (monads, noumenal world, God, etc.) the result is a spurious hybrid principle, a so called “subreptic axiom” (*axioma subrepticum*), which infects the entire research programme of metaphysics like a virus in a body or a malware in a computer.⁴⁶⁶

On Kant’s view, these subreptic axioms can be divided into three “classes” (*species*). Only the subreptic axiom of the first class is relevant for the purposes of the present investigation. This subreptic axiom states that everything that exists, is “somewhere” in space and “somewhen” in time.⁴⁶⁷ The illusions caused by this subreptic axiom explain why the followers of Leibniz tried to localise the monads in space. The ultimate consequence of this mistake is that even soul-like monads are localised in space:

It is on this basis that there come to be bandied on those idle questions about the places in the corporeal world [*universo corporeo*] of immaterial substances (though, just because they are immaterial, there is no sensitive intuition of them, nor any representation of them under such a form), about the seat of the soul, and about other questions of the same kind. And since what is sensitive and what belongs to understanding are improperly mixed together, like squares or circles, it often happens that one of the parties to the dispute presents the appearance of someone milking a billy-goat, and the other of someone holding a sieve underneath. But the presence of immaterial things in the corporeal world is a virtual and not a local presence (though the latter is improperly but repeatedly asserted to be the case). (*Inaugural Dissertation*, § 27, p. 410, Ak. 2, p. 414)

The presence of the immaterial monads is virtual and not local.⁴⁶⁸ This also explains why monads are immaterial substances and not atoms in space; the things we see in space are not identical with the things which exist in the omnipresence of God.⁴⁶⁹ Space is solely a condition of the interaction

⁴⁶³ *Inaugural Dissertation*, § 23, pp. 406-7, Ak. 2, pp. 410-11.

⁴⁶⁴ *Inaugural Dissertation*, § 24, p. 407, Ak. 2, p. 411.

⁴⁶⁵ *Inaugural Dissertation*, § 24, p. 408, Ak. 2, p. 412.

⁴⁶⁶ *Inaugural Dissertation*, § 24, p. 408, Ak. 2, p. 412.

⁴⁶⁷ *Inaugural Dissertation*, § 27, pp. 409-10, Ak. 2, pp. 413-4.

⁴⁶⁸ *Inaugural Dissertation*, § 27, p. 410, Ak. 2, p. 414. Though Kant is cautious on this point, it seems quite clear that the interaction must occur between the monads themselves and in particular the monadic parts of their bodies, for there is no interaction between the monads and their phenomenal bodies.

⁴⁶⁹ Only God can intuit the totality of the parts of the world, as if contained in God, for only God can be present to or “comprise” the world without being localised in it. The intuitions of God are, in other words,

of material phenomena, not of the things themselves, i.e. the monads; ignoring that restriction leads to the subreptic axiom that all things have to have a place somewhere.

Ultimately even God's omnipresence is conceived as local rather than virtual, a mistake which Kant attributes to Clarke and Newton, as we have seen. Transgressing the demarcation line between sensible cognition and purely intellectual cognition thus leads to the subreptic notion of God as a composite being, who is locally rather than virtually present to the monads:

The *presence* of God is imagined to be *local*, and God is enfolded in the world as if He were contained all at once in infinite space, the intention being to compensate for this limitation, it would seem, by means of this local presence conceived *absolutely* [*per eminentiam*], so to speak, that is to say, conceived as infinite. But it is absolutely impossible to be in several places at the same time, for different places are outside one another. It follows that what is in several places is outside itself and present to itself externally, and that is a contradiction. (*Inaugural Dissertation*, § 27, p. 410, Ak. 2, p 414)

Intellectualising places and ascribing a place to God, who is omnipresent, consequently results in the absurd notion of God as present in several places at one and the same time.

To summarise, the main achievement of the transcendental turn – the real distinction between the sensible and the intellectual faculty of the soul – is a presupposition of Kant's division between the principles of sensibility and the principles of understanding, from which the concepts of space, time, substance, causality and God can be derived. In the *Inaugural Dissertation* Kant argues that this division is closely related to the distinction between the principles of the sensible and the intelligible world; space and time are simply not properties of the real ground of the intelligible world, i.e. space and time are transcendently ideal. The transcendental ideality of space follows, Kant argues, from the exposition of the concept of space as the concept of a pure singular intuition and as the source of necessary a priori propositions of Euclidean geometry.

However, to me it seems as if Kant suggests that the same result can be derived from what he says in §§ 8-9 about the concepts of metaphysics as pure and distinct from the concepts of sensibility, for instance the concepts of space and time. As Kant argues in these sections, thinking that space is transcendently real, i.e. that all monads have a place is a subreptic proposition, is inconsistent with the concept of God as merely virtually present to the monads. Thus, Kant's approach to the subreptitious fallacies of metaphysics is in this sense based on the premises of the critical metaphysics established as a result of the critical turn.

5.6 The Path to the Transcendental Aesthetics and the Critique of Pure Reason

Kant scholars often describe the decade following upon Kant's presentation of the inaugural dissertation as the "silent decade". However, traces of Kant's thoughts are left in his letters and in his notes and lectures on Baumgarten's *Metaphysica* and Meier's *Vernunftlehre*. In the notes on metaphysics, Kant continues his defence of the transcendental ideality claim, as he tries to show how this can help us to avoid making the fallacy of using metaphysical concepts in a subreptitious way. Recognising the transcendental ideality of space also makes it possible to solve the contradictions between the mathematical and the metaphysical accounts of matter and bodies,

divine, rational intuitions, which are active, in the sense that they create the very objects that they represent. Cf. *Inaugural Dissertation* §§ 13, 16, pp. 391, 401, Ak. 2, pp. 398, 407.

which had haunted not only Leibniz but also Wolff and Knutzen. The transcendental ideality of space and time properly reveals the demarcation line between sensibility and the understanding, which separates the phenomenal objects of experience from the noumenal objects of understanding, which also are the object of pure metaphysical knowledge.

On the one hand, all of this seems to give further support for readings of the inaugural dissertation, which emphasise the similarities, rather than the differences, between the *Inaugural Dissertation* and the *Critique of Pure Reason*. On the other hand, such readings are not convincing unless they are able to explain why Kant found it necessary to revise the metaphysics presented in the *Inaugural Dissertation*. In short, they need to explain why Kant found it essential to spend another ten years in the provinces of East Prussia, working on the transcendental idealism he would come to defend in the *Critique of Pure Reason*, instead of moving to the more affluent Western parts of the kingdom and enjoying the fruits of his fame.⁴⁷⁰

Kant's letters to his friends and colleagues in Berlin and other places are interesting in this context, since they open up a window to what going on in his head. In these letters, Kant reveals that he had strong doubts about the completeness of his metaphysics. One of the earliest letters, written in September 1770, just shortly after the disputation, was addressed to Lambert. This letter is interesting, not only because it suggests that Kant seems to have considered the inaugural dissertation as a very long and tardy reply to the ideas presented in Lambert's letter four years earlier, but also because it gives a first indication of the weaknesses Kant had spotted in his inaugural dissertation:

The most universal laws of sensibility play a deceptively large role in metaphysics, where, after all, it is merely concepts and principles of pure reason that are at issue. A quite special, though purely negative science, general phenomenology (*phaenomenologia* [sic] *generalis*), seems to me to be presupposed by metaphysics [*vor der Metaphysik vorhergehen zu müssen*]. In it the principles of sensibility, their validity and their limitations, would be determined, so that these principles could not be confusedly applied to objects of pure reason, as has heretofore almost always happened. For space and time, and the axioms for considering all things under conditions, are, with respect to empirical knowledge and all objects of sense, very real; they are actually the conditions of all appearances and of all empirical judgments. But extremely mistaken conclusions emerge if we apply the basic concepts of sensibility to something that is not at all an object of sense, that is, something thought through a universal or a concept of understanding as a thing or substance in general, and so on. (*Correspondence*, p. 96, Ak. 10, p. 98)

The goal Kant expresses here is not to uproot all transcendent, speculative metaphysics about the monads, the intelligible world, the mind and God – but to purify it from those spurious concepts that are produced when we transcend the limits of the principles of sensibility. For these principles are valid only of the objects of the phenomenal world, like atoms, material bodies, states of motion, etc.

In all, this suggests that the critical turn was not so much about entirely rejecting speculative metaphysics, as to delimit the horizon of the latter, by systematically identifying and eliminating all those subreptic axioms, from which atomism, materialism, and ultimately also occasionalism and idealism originated. This also gives the clue to the phenomenology he had outlined in his letter

⁴⁷⁰ 1778 Zedlitz offered Kant the prestigious post as professor of philosophy in Halle, a chair that had been held by no one less than Wolff. Kant turned the offer down however. For the details of this story, see Cassirer (1981, pp. 119-20).

to Lambert.⁴⁷¹ Part of the phenomenology was already completed in the inaugural dissertation; in §§ 2-3 and § 5 of the *Inaugural Dissertation* Kant had adumbrated the principles of sensibility, but not with the “careful and extensive exposition” needed for a science of the origin, validity, and limits of the concepts of space and time, that he later would present in the *Transcendental Aesthetic*.

Fascinatingly, Lambert's sharp eye spotted that Kant's investigation promised to bring back the “true concept” of continuity to metaphysics, by preventing it from being mixed up with the concept of substantial composites (*complexus entium simplicium*).⁴⁷² He also agreed that the noumenal world is not localised in space. However, in the end he warned Kant from ignoring that space has a counterpart (*simulachrum*) in the noumenal world:

The whole intelligible world [*Gedankenwelt*] is non-spatial; it does, however, have a spatial counterpart [*Simulachrum*], which is easily distinguishable from physical space. Perhaps this bears a still closer resemblance to it than merely a metaphoric one. (*Correspondence*, p. 117, Ak. 10, p. 108)

Kant, however, persistently defended the transcendental ideality claim, even in the face of the critique from close friends. For instance, in a letter from December 1770, Moses Mendelssohn pointed out to Kant that time might be subjective, but still also objective:

Time is (according to Leibniz) a phenomenon and has, as do all appearances, an objective and a subjective aspect. The subjective is the *continuity* thereby represented; the objective is the succession of alterations that are *rationata* or consequences equidistant [*gleichweit*] from a common ground. (*Correspondence*, p. 124, Ak. 10, pp. 115-6)

However, none of this moved Kant away from his position. For instance, in a note dated 1769-1770 or 1770-1771, Kant declares that the substances, i.e. the monads, cannot have any locations in space; locations can only be ascribed to “sensible representations”.⁴⁷³ Kant links the non-spatiality of the monads to the possibility of forming a universe (*Weltganze*), which he describes as an absolute totality (*Absolutganze*).⁴⁷⁴ The absoluteness belongs only to the intelligible world, which consists of simple parts.

Likewise, in a note, which Adickes dates to 1772 or 1776-8, Kant declares that simple substances cannot be parts of the sensible world.⁴⁷⁵ Only composites, like material bodies, can be parts of the sensible world, because they can be coordinated next to each other, Kant explains in a note from 1773-1775.⁴⁷⁶ This coordination is not just an act of the mind, but also a form, under which they are represented.⁴⁷⁷

The condition under which this order is possible is space, which means that it is absolute, in the negative sense of not being an order or relation. Space is absolute not because it is something that

⁴⁷¹ Most likely, the phenomenology was inspired by Lambert's phenomenology, which he had presented in the second part of *Neues Organon* and which Kant was familiar with. The purpose of the phenomenology was to exhibit the illusions of human knowledge and their influence on the correctness/incorrectness of this knowledge; see *Neues Organon* (2), *Phänomenologie*, § 1 pp. 117-8.

⁴⁷² See, *Correspondence*, p. 15, Ak. 10, p. 106.

⁴⁷³ *Reflexionen zur Metaphysik*, Nr. 4316, Ak. 7, p. 504.

⁴⁷⁴ *Reflexionen zur Metaphysik*, Nr. 4525, Ak. 17, p. 582.

⁴⁷⁵ *Reflexionen zur Metaphysik*, Nr. 4534, Ak. 17, p. 585.

⁴⁷⁶ *Reflexionen zur Metaphysik*, Nr. 4673, Ak. 17, p. 639.

⁴⁷⁷ *Reflexionen zur Metaphysik*, Nr. 4673, Ak. 17, p. 639.

exists in itself as a container of the intelligible world, but because it is the ideal condition under which all outer things can be known. Otherwise, it would be impossible to have a priori knowledge of space:

The *spatium absolutum*, this riddle of the philosophers, is something entirely actual [*richtiges*] (not *reale*, but *ideale*), otherwise one would not be able to say something a priori about it, and truly, not through general concepts, but through properties that let themselves be perceived at it through immediate apprehension [*Fassung*]. It is, however, not something external, but the condition of the form of all external representation, which exists in the mind itself. It is nothing imaginary (*ens imaginarium*), for it is the sole actual condition of the representation of actual external things [*wirklicher äusserer Dinge*]. The order of things which are next to each other is not space, but space is that which makes such an order, or better, coordination, possible.⁴⁷⁸ (*Reflexionen zur Metaphysik*, Nr. 4673, Ak. 17, p. 639)

Space is absolute, but only in the sense that it contains the condition, in accordance with which it is possible to represent an order between different coexisting parts of an object, like for instance the three sides of a triangle, which originally occur to the imagination in different directions, to the left, to the right, etc. Therefore, space is also the condition under which these directions can be coordinated and brought to the unity of one whole. Space cannot “belong” to things in themselves, neither as a determination, nor as a condition under which it can be represented, as Kant declares in the note quoted above.⁴⁷⁹ This contention is, Kant humbly remarks, of no great importance in mathematics and the special sciences; the significance of the thesis of the transcendental ideality of space is restricted to metaphysics:

The question if space is something ideal (not imaginary) or real, does not interest the different sciences. It has not been brought to the attention of the mathematics, the mechanics and the general physics; and although Leibniz as well as Newton (I mention them above the other great names), assume its adherent and subsisting reality respectively, both posit it of things in the world, as if both space and time were two for themselves existing containers of the things. And even if the ideality [of space J.J.] is demonstrated by us, they [the sciences J.J.] cannot do anything differently with respect to such investigations. However, when these answers become transcendent things are different.⁴⁸⁰ (*Reflexionen zur Metaphysik*, Nr. 4673, Ak. 17, p. 641)

Though Kant’s characterisation of Leibniz’s metaphysics of space is rather crude (to put it mildly) it is of interest that he takes Leibniz to be an opponent to the transcendental ideality claim, along with Newton.⁴⁸¹

In a note that Adickes dates to the end of the 1770s, or perhaps the beginning of the 1780s, Kant repeats, almost verbatim, the contention from the inaugural dissertation, namely that space cannot be a determination of objects in themselves.⁴⁸² Typical of the pure space of geometry is that its unity

⁴⁷⁸ My translation, J.J.

⁴⁷⁹ *Reflexionen zur Metaphysik*, Nr. 4673, Ak. 17, p. 640.

⁴⁸⁰ My translation, J.J.

⁴⁸¹ It goes without saying that the metaphysical importance of the transcendental ideality claim extends to such principles as Leibniz’s principle of the identity of indiscernibles; the latter holds only for the noumena, not for the appearances in space.

⁴⁸² *Reflexionen zur Metaphysik*, Nr. 5298, Ak. 18, p. 147.

anticipates the plurality of its parts, which entails that it is infinitely divisible, which of course is not the case with the noumena and the noumenal, intelligible world in general.⁴⁸³

Kant returns to the issue of how the transcendental ideality claim is connected with the nature of geometry in a note, which Adickes dates to about the same time as the note above. The possibility of having geometric knowledge of space which is a priori and necessary is, Kant repeats, not consistent with Leibniz's claim that the concept of space is derived from the objects of knowledge (*Sachen*).⁴⁸⁴ Had space been a determination of things in themselves, it would become necessary for us to intuit the truths about space in God:

Had space been something objective and necessary, from where would we know that?⁴⁸⁵ We can derive no proposition from experience, which simultaneously also could be known as plainly [*schlechthin*] necessary, and a priori is it not known and not knowable. The representation would have to be acquired, but then it would also not be necessary. Thus, it must be intuited in God.⁴⁸⁶ (*Reflexionen zur Metaphysik* Nr 5329, Ak. 18, p. 153)

The necessity of Euclidean geometry supports the contention that we have knowledge of outer things not in God, but in space, in accordance with the principles that are internal to the sensible world and not in God. The distinction between space as a principle of the form of the sensible world and God as a principle of the noumenal world, which Kant introduced in the *Inaugural Dissertation*, is justified by an epistemological argument from geometry, which is independent of metaphysics and theology.

In the notes on metaphysics from the late 1770s, Kant also makes it clear that the pure intellectual concepts, such as the concept of substance, causality, totality, etc., necessarily apply to phenomenal objects. The determinations under which pure intellectual concepts apply to the objects in the sensible world must, however, not be conferred to noumenal objects. The distinction between sensibility and understanding is mirrored not only in the distinction between principles of sensibility and understanding but more profoundly in the distinction between immanent and transcendent uses of the pure concepts of the intellect. Only thus can we avoid the antinomies that ensnares metaphysics. In the beginning of the 1780s, Kant would present these results in public.

⁴⁸³ *Reflexionen zur Metaphysik*, Nr. 5299, Ak. 18, p. 147.

⁴⁸⁴ *Reflexionen zur Metaphysik*, Nr. 5327, Ak. 18, p. 153

⁴⁸⁵ Question mark added by me J.J.

⁴⁸⁶ My translation, J.J. The dating of this note is unclear, but according to Adickes Kant wrote it no earlier than 1773 and perhaps even as late as the 1780s.

6. The Transcendental Aesthetic and the Transcendental Ideality Claim

We should now be in a position to deal with Kant's answer to the question of the reality of space during the mature phase of the critical period. This leads us to the *Critique of Pure Reason* and Kant's arguments for the transcendental ideality of space, which he presents in the Transcendental Aesthetic. The starting-point of this chapter is Kant's outline of a phenomenology of space and the Transcendental Aesthetic as the science of the principles of a priori sensibility. *Section two*, introduces Kant's method of isolating the determinations, which belong to the principles (forms) of sensibility.

Section three, discusses how this leaves us with only figure and extension. Contrary to what contemporary critics claim, Kant's method is vital to understand what the Transcendental Aesthetic tries to accomplish, in particular with respect to the proof of the transcendental ideality of space. *Section four*, shows that Kant operates with two concepts of space in the Transcendental Aesthetic: the concept of geometric spaces and the concept of metaphysical space. The origin and content of the metaphysical concept of space is the pure extension, uncovered by the method of abstraction, which belongs to the form of (outer) sensibility. The exposition of the metaphysical concept of space, which Kant already outlined in the *Inaugural Dissertation* (Chapter 5), must not be confused with the exhibition of how figures and other spaces are determined in agreement with the concepts of Euclidean geometry. Instead, the exposition of the metaphysical concept of space exhibits how the subjective space is originally given to us, namely as a unique, indivisible, infinite and continuous formal ground of all outer appearances and geometric objects. Kant thinks that this shows that space is not an empirical concept but must be given to us in a pure intuition.

Section five deals with the Leibnizian alternatives to Kant's transcendental ideality claim. The core of the Leibnizian alternatives, suggested by critics like Eberhard and Pistorius, is that Kant overlooked the possibility that space might be partly real and partly ideal. The basic conclusion of this section is that the exposition of the metaphysical concept of space provides Kant with an argument against the Leibnizian alternatives. The exposition of the pure extension, which the method of isolation uncovers, shows that space is a continuous whole which cannot be reduced to an all-encompassing order or place of all places. Thus, a mere order of spatially localised simple substances (noumena) cannot explain what it is that makes the original phenomenon of space continuous, and in this sense it is not real, something which even Eberhard admits. However, as will be seen, Kant's argument still falls short of completely rejecting the Leibnizian alternative, because he cannot (and perhaps does not want to) exclude the possibility that there is a correspondence between the spatial order of phenomena and the order of coexistence of noumena.

6.1 The Idea of the Transcendental Aesthetic

Kant's idea of a Transcendental Aesthetic, i.e. a science of the principles of a priori sensibility, can most likely be traced back to a letter to Lambert. In this letter, written shortly after the presentation of his inaugural dissertation, Kant had suggested that metaphysics presupposes a "general phenomenology".⁴⁸⁷ In the letter, he envisioned this general phenomenology as a "purely negative

⁴⁸⁷ *Correspondence*, p. 96, Ak. 10, p. 98.

science”, which would determine the validity and limits of the principles of sensibility. In particular, Kant envisaged that an investigation into the validity and limits of the principles of sensibility was necessary in order to avoid that they were applied to the pure, noumenal objects of thought, most notably God and the intelligible world of monads:

A quite special, though purely negative science, general phenomenology (*phaenomenologia* [sic] *generalis*), seems to me to be presupposed by metaphysics. In it the principles of sensibility, their validity and their limitations, would be determined, so that these principles could not be confusedly applied to objects of pure reason, as has heretofore almost always happened. For space and time, and the axioms for considering all things under conditions, are, with respect to empirical knowledge and all objects of sense, very real; they are actually the conditions of all appearances and of all empirical judgments. But extremely mistaken conclusions emerge if we apply the basic concepts of sensibility to something that is not at all an object of sense, that is, something thought through a universal or a concept of understanding as a thing or substance in general, and so on. (*Correspondence*, p. 108, Ak. 10, p. 98)

The reason for calling this negative science “transcendental aesthetic” and not “general phenomenology” probably goes back to Baumgarten, who used the term “aesthetics” as the name of the science of the principles of sensible knowledge.⁴⁸⁸ The section on the Transcendental Aesthetic, in the *Critique of Pure Reason* was therefore probably worked out in agreement with the plan he had outlined in his letter to Lambert.

This makes it necessary to dig a little bit deeper into Kant’s Transcendental Aesthetic and the role it plays in his transcendental philosophy and in particular his metaphysics. Kant divides all transcendental philosophy into two branches: critique and metaphysics, which includes the metaphysics of nature and the metaphysics of morals.⁴⁸⁹ Transcendental philosophy as critique investigates into the *origin*, *extent* and *limits* (*Gränzen*) of the pure knowledge, which follows merely from the principles of the faculty of reason, in the wider sense.⁴⁹⁰ It is this pure knowledge which metaphysics presents in a systematic form. The systematic part of metaphysics includes both general metaphysics and special metaphysics. Whereas the general metaphysics of nature contains *ontology* and *critique*,⁴⁹¹ special metaphysics contains *rational cosmology*, *rational physics*, *rational psychology* and *rational theology*.⁴⁹²

Metaphysics considered so far does not tell us anything about how the objects of pure knowledge are given. Kant marks this by adding that metaphysics not only contains the principles of pure reason, but also a physiology of reason, which contains the principles in accordance with which an

⁴⁸⁸ Baumgarten’s use of the term “aesthetic” is discussed by Vaihinger (1895, pp. 113-4). Kant makes an explicit reference to Baumgarten’s aesthetic in A21/B35.

⁴⁸⁹ A841/B869. Things are complicated by the fact that Kant, occasionally, uses the term “philosophy” to denote all metaphysics, including both the metaphysics of morals and the metaphysics of nature.

⁴⁹⁰ *Metaphysik Mrongovius*, Ak. 29, pp. 779-81, 786-7; for a similar discussion of the nature of transcendental philosophy as critique in the *Critique of Pure Reason*, see A2-6/B6-10.

⁴⁹¹ *Reflexionen zur Metaphysik*, Nr. 4851, Ak. 18, p. 9. Kant’s terminology is partly confusing, for general metaphysics belongs to the systematic part of transcendental philosophy, and should just contain ontology. To me it seems as if this difficulty can be solved if it is kept in mind that Kant sometimes uses the term “metaphysics” in a wider sense, namely as another term for transcendental philosophy. (See for instance A841/B869.) General metaphysics as transcendental philosophy therefore contains both a critique and a systematic part, namely ontology. Accordingly, transcendental philosophy is ontology when it deals with the universal predicates of an object in general, i.e. the pure concepts of understanding or categories, but critique insofar it investigates the origin, validity and limits of these concepts.

⁴⁹² A846-7/B874-5.

object is given, either to the sensibility or independently of the sensibility.⁴⁹³ In the former case, the physiology is immanent; in the latter case, the physiology is transcendent.⁴⁹⁴

The Transcendental Aesthetic is therefore simply transcendental philosophy, applied to the immanent physiology. This means that it is both critique and metaphysics. It is metaphysics insofar as it exhibits our knowledge of space and time as they are originally given to the sensibility. However, it is a critique, insofar as it isolates the elementary principles or forms, from which pure sensible knowledge originates and by virtue of which its extension and limits can be determined. It is in the latter sense that the Transcendental Aesthetic can be seen as a continuation of Kant's plan for a general phenomenology. Let us now consider the Transcendental Aesthetic in some closer detail.

6.2 Sensations, Empirical Intuitions and Thoughts

On the assumption that the Transcendental Aesthetic is a science, which investigates the origin of the pure knowledge of space merely from our sensibility, we can expect that Kant is going to isolate the principles of this sensibility. In § 1 of the Transcendental Aesthetic Kant explains that this method of isolation or abstraction involves two steps. In the first step, we “isolate” (*isolieren*) the sensibility by “separating off” (*abondern*) its representations (i.e. the empirical intuitions) from the concepts of understanding.⁴⁹⁵ In the second step, the empirical intuitions are, in their turn, “detached” (*abgetrennt*) from the a posteriori contributions of the sensibility, namely the sensations.⁴⁹⁶ In this way we will be left with the determinations which belong to the pure forms or principles of the sensibility from which the pure knowledge of space and time originates.

Kant prepares the isolation of the sensibility by introducing his readers to a definition of “intuition”, which is immediately followed by a definition of “sensibility”. Sensibility is essentially a faculty or capacity (*Fähigkeit*) for receiving representations “through the mode in which we are affected by objects.”⁴⁹⁷ The immediate result of the sensibility being affected by an object is a *sensation*.⁴⁹⁸ The intuition of an object, through a sensation, is an *empirical intuition*.⁴⁹⁹ Typical of an intuition is that it is *immediately* related to an object, which is *given* to it without the mediation of any universal marks or characters.⁵⁰⁰

In the opposite case, when the mind is related to the object through the *mediation* of characters there is *thought*, which is a *universal* representation.⁵⁰¹ Implicitly this suggests that intuitions are passively given, immediate, and *singular* representations of objects, whereas thoughts are actively produced, mediated, and *universal* representations of the characters or marks of these objects.⁵⁰²

⁴⁹³ A845/B874.

⁴⁹⁴ A845-6/B873-4.

⁴⁹⁵ A22/B36.

⁴⁹⁶ A22/B36.

⁴⁹⁷ A19/B33.

⁴⁹⁸ A20/B34.

⁴⁹⁹ A20/B34.

⁵⁰⁰ A19/B33.

⁵⁰¹ The claim that thoughts are universal representations and that intuitions are singular representations, is not made explicitly in the passage quoted above, but can be found for instance in Kant's *Logik*, Ak. 9, p. 91.

⁵⁰² The singularity of empirical intuitions is not mentioned in the passage quoted above; an explicit reference to their singularity occurs first in A320/B376.

The intuitions come with different degrees of clarity.⁵⁰³ However, according to Kant, there is no way that empirical intuitions could become representations of the things in themselves, even if we could bring them to the highest degree of clarity and distinctness. The intuitions are, in other words, not confused representations of things in themselves. However clear (“transparent”) an appearance may be, it will not become an object of pure thought, that is, a representation of a thing in itself.⁵⁰⁴

The understanding on the other hand represents objects spontaneously without being affected by them. Whereas the sensibility is *passive* because it receives intuitions of objects, the understanding is *active* because it forms concepts and applies them to objects.⁵⁰⁵ The difference between the sensible and the intelligible faculty of the soul cannot be reduced to a merely logical difference, a view that Kant attributes to Leibniz and Wolff.⁵⁰⁶ The sensibility is different from the understanding, not because it represents the objects with less clarity and distinctness, but because its representations have a different “origin and content”⁵⁰⁷ than the representations of the understanding.

6.3 Appearances: Matter and Form

On the basis of the distinction between sensibility and understanding, Kant concludes that an object of sensibility must be an *undetermined object* of the empirical intuition – an appearance.⁵⁰⁸ This seems to follow from what Kant says about the empirical intuitions, for as objects of representations *received* by the sensibility, appearances are not *immediate* objects of understanding. The *matter* of the appearance is that in the appearance which *corresponds* to sensation, and which is given by the sensibility.⁵⁰⁹ Sensible qualities or realities, such as for instance colours, sounds, etc., correspond to sensations, but are not identical with them.⁵¹⁰ The sensibility is that which gives matter to our representations, as Kant puts it.⁵¹¹

Removing sensations from empirical intuitions leaves us with the *form* of appearances, namely space and time. The form of appearances is, Kant explains, the *formal ground*, which makes (*macht*)

⁵⁰³ See *Reflexionen zur Logik*, Nr. 2377, 2383 in Ak. 16, pp. 337-8. The attention, which depends on strong impressions, is involuntary according to Kant, and should not be confused with the voluntary attention involved in the act by which an appearance is brought under concepts. This view is in line with Baumgarten’s psychology of attention, which Kant seems to have defended at least in some of the earlier lecture notes, *Metaphysik Herder*, Ak. 28, pp. 850, 869. According to Baumgarten, the sensation is clearer the stronger the impression is. Moreover, I attend to that which I clearly represent (perceive). See *Metaphysica*, § 537 and § 529.

⁵⁰⁴ A43/B60.

⁵⁰⁵ For a critique of Kant’s distinction between intuitions and thought, see Falkenstein (2004, pp. 28-32). According to Falkenstein Kant conflated intuitions and singular representations, which made it difficult for Kant to explain how the understanding can represent singular objects.

⁵⁰⁶ A44/B61-2. For a closer discussion of Kant’s critique of Wolff (and Baumgarten) with respect to the distinction between sensibility and understanding, see Chapter 3, section 5.

⁵⁰⁷ A44/B62.

⁵⁰⁸ Later, in the so called Amphibolies, Kant returns to this theme, where he connects it with the view that Leibniz “intellectualised” the phenomena, a charge which echoes his diagnosis of the origins of subreptic axioms presented in the *Inaugural Dissertation*.

⁵⁰⁹ A20/B34.

⁵¹⁰ Following the terminology of Vaihinger (1892, pp. 57-8) this amounts to a “real difference” between sensations and the matter of the appearances.

⁵¹¹ *Reflexionen zur Anthropologie*, Nr. 339, Ak. 15, p. 134.

it possible to intuit the manifold of appearances as *ordered* in spatial and temporal *relations*.⁵¹² Otherwise, appearances will be uncoordinated and confused. The form of appearances is therefore the principle or condition, in accordance with which appearances can be represented outside each other, or as succeeding each other.⁵¹³ From this Kant concludes that the form of appearances must “lie ready”⁵¹⁴ for the sensations, as an *a priori* form in the mind.

In other words, the form is not the order of appearances, but that which makes the order possible. More exactly, the form makes it possible that appearances are *given* to the sensibility as ordered. In other words, the order is not produced by the sensibility, as Kant seems to have argued in the late 1760s and in the *Inaugural Dissertation*.⁵¹⁵ Orders are produced only insofar as the spatial and temporal manifold is combined (or re-combined) in a figurative synthesis in the active part of the sensibility, i.e. in the imagination.⁵¹⁶ Without a figurative synthesis, it would be impossible have a definite, distinct empirical intuition of an appearance of a definite duration, size, and shape, within the unity of a perceptual image, which can be recognised under a concept.⁵¹⁷

In a subsequent passage Kant suggests that we can know what “belongs” (*gehört*) to this *form of sensibility* by abstraction, in accordance with the method of isolation. Kant presents the following example of how to apply this method:

Thus, if I take away [*absondere*] from the representation of a body that which the understanding thinks in regard to it, substance, force, divisibility, etc., and likewise what belongs [*gehört*] to sensation, impenetrability, hardness, colour etc., something still remains over from this empirical intuition, namely extension [*Audehnung*] and figure [*Gestalt*]. These belong to [*gehören*] pure intuition, which, even without any actual object of the senses or of sensation, exists in the mind *a priori* as a mere form of sensibility. (A20-1/ B35)

The key is to conceive the body from a transcendental point of view, i.e. as a mere representation, and not as a real thing. Euler neglected this distinction, and this is the explanation as to why he concluded that reflection and abstraction only present us with the idea of place in general. However, once the body is conceived as an appearance or representation, we can abstract and isolate an entirely new type of determinations, which originates from the form of sensibility, rather than the sensations.

⁵¹² A20/B34.

⁵¹³ The forms which occur in the Transcendental Aesthetic are thus more like the principles of the forms of the sensible world, which Kant discussed in the *Inaugural Dissertation*. For a critical remark on Kant’s terminological shift, see Vaihinger (1894, p. 60).

⁵¹⁴ A20/B34.

⁵¹⁵ Falkenstein (2004, pp. 72-104) gives an ambitious interpretation of Kant’s concept of spatial form in terms of an order, which on one hand is a priori and innate, namely with respect to its structural and topological properties, and on the other hand as a posteriori and given, namely as the order in which sensations and appearances are given. To me this seems acceptable, as long as one keeps in mind that space cannot be reduced to an order, according to Kant, namely because it is a continuous whole.

⁵¹⁶ A figurative synthesis (B151) is the product of imagination. Thus, the imagination takes the role, which Kant previously ascribed to the faculty of intuition. For a discussion of the faculty of intuition, see Chapter 3, section 5.

⁵¹⁷ According to Kant, confusion is the cause of the indistinctness of a representation. However, from this it does not follow that distinctness arises merely because there is an order; what is ordered needs to be re-combined and taken up within the unity of consciousness under a concept, for instance the concept of a figure, etc. “Distinctness alone makes it possible that an aggregate of representations becomes knowledge, in which *order* is thought in this manifold, because every conscious combination presupposes unity of consciousness, and consequently a rule for the combination.” See, *Anthropology*, p. 26, Ak. 7, p. 138.

In the lecture notes taken by Mrongovius, Kant illustrates his method, by applying it to the empirical intuition of a piece of chalk.⁵¹⁸ Thus, taking the empirical intuition of the chalk in abstraction from the sensation of its impenetrability, dryness and whiteness and the thought of its substantiality, divisibility and force, leaves us with nothing but extension and figure. Extension and shape therefore originally belong to the contributions of the form of sensibility or *pure intuition*, i.e. the empirical intuition taken in abstraction from the sensible content it contains. Thus, unlike the proto-expositions in § 15 of the inaugural dissertation, Kant no longer describes the pure intuition as a concept; the concept of space derives from a determination, which belongs to the pure intuition, namely extension, but it is not a pure intuition.

In the rest of § 1 Kant explains that he no longer reserves the term “form” for the relations of coexistence and succession, which are possible in space and time. Instead, he uses “form” to designate space and time, considered as conditions of relations of coexistence and succession. The forms of appearances, namely space and time, are thus identical with the principles of a priori sensible cognition, which are the starting-points of the investigation of the Transcendental Aesthetic.⁵¹⁹ Isolating the principle or form from which the pure sensible knowledge of space originates, would then put us in a position to determine its validity and limits, in accordance with the programme Kant outlined for the Transcendental Aesthetic.

Many commentators have argued that the situation is much more complicated. They argue that there can be no pure knowledge of space unless understanding conceptualises the pure intuition of space. Here understanding has to rely on the active part of the sensibility, the imagination, for a determinate Euclidean space that can be brought under a concept depends on a figurative synthesis of the manifold of the pure intuition of space. Understanding knows space, only by geometric constructions of lines, angles, circles, and other spaces of Euclidean geometry. The Transcendental Aesthetic is the science of the principles of Euclidean geometry, its origin, validity, and limits.

Inasmuch as the figurative synthesis of imagination is determined by the understanding, it seems to follow that the unity of space is the product of understanding, rather than immediately given to the sensibility. This so called “conceptualist interpretation” of the Transcendental Aesthetic, supported by Michael Friedman and Beatrice Longuenesse among others, finds rich support in a famous footnote to the B-version of Kant’s Transcendental Deduction (B160-1).⁵²⁰ In this footnote, Kant explains that the representation of space as a geometric object, in a formal intuition, i.e. a geometric construction, requires more than just a form of sensibility, namely the representation of a unity, which can be brought under concepts. Furthermore, this unity “presupposes a synthesis which does not belong (*angehört*) to the senses but through which all concepts of space and time first become possible.”⁵²¹ Thus, even if the unity of the formal intuition of space does not “belong” (*gehört*) to a concept of understanding, Kant still underlines that it presupposes a (figurative) synthesis, which makes the sensibility determined by the understanding.⁵²²

Critics of the conceptualist interpretation, like Michel Fichant,⁵²³ Christian Onof, and Dennis Schulting⁵²⁴ underline that Kant actually makes a distinction between the concepts of Euclidean

⁵¹⁸ *Metaphysik Mrongovius*, Ak. 29, pp. 795-6.

⁵¹⁹ A21-2/B35-6.

⁵²⁰ For a discussion of the conceptualist interpretation and Friedman’s and Longuenesse’s views in particular, see Onof/Schulting (2014, pp. 290-1) and Lydia Patton (2011, pp. 277-81).

⁵²¹ B161, footnote.

⁵²² B161, footnote.

⁵²³ Fichant (2004, pp. 530-550).

⁵²⁴ Onof/Schulting (2014, pp. 285-304).

spaces and the concept of the immediately given space of the sensibility. It is this latter concept which Kant refers to as the concept of the “metaphysically, i.e. immediately, but merely subjectively given space”, in a reply to the respected mathematician Abraham Gotthelf Kästner (1719-1800).⁵²⁵ Thus, the conceptualist interpretation confuses the metaphysical concept of space with the concept of a Euclidean space, e.g. a straight line, which is a made concept of a formal intuition. The concept of the straight line and the Euclidean postulate that a straight line can be drawn between any two points, presuppose the construction of a straight line, but this construction presupposes in its turn the immediately given, infinite metaphysical space. We must therefore resist the temptation to think that the metaphysical concept of space is related to space in the same way that the concepts of Euclidean geometry are related to space.

Pure knowledge from the metaphysical concept of space is knowledge of what belongs to the spatiality of space as a whole, which is originally given to us prior to the Euclidean spaces. It is presented in the form of an analysis or exposition of the concept of the metaphysical concept of space. Pure knowledge of the metaphysical space originates from the form of outer sensibility and extends no further than to the objects conditioned by this form, which also sets the limits of any knowledge derived from the metaphysical space. However, with this said, the question still remains as to *how* the metaphysical concept of space is related to the immediately given, subjective space.

Here Onof and Schulting argue that imagination and ultimately understanding have a peculiar role to play.⁵²⁶ The original, subjectively given space, as a form of outer sensibility, has an absolute, inner unity of its own (*sui generis*), which is different from the unity of a Euclidean space, a line, an angle, a circle, etc.⁵²⁷ However, in order for that unity to become a “unity for my cognition”,⁵²⁸ the manifold of spaces, which are given by the form of outer sensibility, must be apprehended, synthesised and brought to the unity of a formal intuition.⁵²⁹ This formal intuition is not a geometric construction, but rather something resembling a transcendental schema, whereby the unity of the form of outer sensibility is determined under the categories.⁵³⁰

Indirectly, this suggests that the exposition of the metaphysical concept of space presents us with determinations of the metaphysical space, which stand under the categories. Onof and Schulting make no detailed suggestions about how to reread Kant’s exposition of the metaphysical concept of space in the light of their interpretation of the pure knowledge of space, but an attempt to fill this lacuna has been presented in a relatively recent paper by Henny Blomme.⁵³¹ On Blomme’s interpretation, the metaphysical space is determined in regard to the categories of modality, relation, quality and quantity.⁵³²

For instance, according to Blomme we have an actual representation of space, from which he concludes that we have the representation of an actual space, which exists at a determinate time, in accordance with the transcendental schema of actuality.⁵³³ However, because space is a necessary condition of outer experience, Blomme concludes that space necessarily exists at all times, in accordance with the transcendental schema of necessity⁵³⁴ and moreover as a permanent,

⁵²⁵ *Über Kästners Abhandlungen*, Ak. 20, p. 420

⁵²⁶ Onof/Schulting (2014, pp. 295-6).

⁵²⁷ Onof/Schulting (2014, p. 295).

⁵²⁸ Onof/Schulting (2014, p. 296).

⁵²⁹ Onof/Schulting (2014, pp. 297-8).

⁵³⁰ Onof/Schulting (2014, pp. 296-7).

⁵³¹ Blomme (2012, pp. 152-4).

⁵³² Blomme (2012, p. 152).

⁵³³ Blomme (2012, p. 153).

⁵³⁴ Blomme (2012, pp. 155-6).

(necessary) ground or substrate of outer intuitions, in accordance with the transcendental schema of substance.⁵³⁵

The trouble with Blomme's reconstruction of the exposition, which he partly shares with Onof and Schulting, is that he makes the original subjective space into a substratum or substance, which moreover necessarily exists, like God.⁵³⁶ However, as we have seen (Chapter 5), Kant quite explicitly denies that space is a necessary substance. Space is not God or an accident of God.

Space is not even a phenomenal substance, according to Kant, for the category of substance applies only to the real permanent substrates in time, in accordance with the transcendental schema of the category of substance.⁵³⁷ Space is at most permanent,⁵³⁸ but only if there is time in space, i.e. only insofar as it is filled with real, material substances, which move in space. Taken as a pure form, space does not have a determinate existence in time (*Dasein*), which means that it cannot be sensed. As a pure form of sensibility, space does not strictly exist at all, but is the representation of the "mere possibility of coexistence".⁵³⁹ The exposition of the metaphysical concept of space has no other datum than the pure extension that belongs to the original phenomenon of space, and which the method of isolation reveals.⁵⁴⁰ Let us consider this point further.

6.4 The Metaphysical Expositions and the Third Alternative

We have already seen how Kant, in the end of the 1760s, pointed out that space is not a concept, neither an empirical concept of reflection, nor a pure concept of reflection. However, in spite of this, Kant also pointed out that metaphysics was still in search of a pure concept of space. Though Kant's observation is ambiguous it seems as if he wants to make a distinction between what space is, namely a pure form of the sensibility and our concept of this pure form. The latter concept is the concept of the metaphysical, immediately given space, which is the concept of a formal ground, a principle of sensibility, which *underlies* the appearances and their primary qualities (*Bestimmungen*).

The ambiguity between space as a form and the concept of space as a pure intellectual concept of this form might explain why Kant refers to his investigation of the origin, validity, and limits of the pure knowledge of space, as something that evolves from a "Metaphysical Exposition of the Concept of Space" (*Metaphysische Erörterung dieses Begriffs*).⁵⁴¹ In his logic, Kant presents an exposition as a way of making the content of a given concept distinct. Thus, an exposition is a

⁵³⁵ Blomme (2012, pp. 157-8).

⁵³⁶ Blomme (2012, pp. 157-8). In all fairness, it must be noted that Blomme's interpretation only entails that space is a substance, in the limited sense that it is the substratum of all appearances. Thus, space is not a "physical substance", according to Blomme, which adds further complexity to his interpretation.

⁵³⁷ A143/B183.

⁵³⁸ B291.

⁵³⁹ A274. For a closer discussion of this passage, see Heidegger (1997, pp. 100-1). Kant is ambiguous, however, and sometime he speaks about space as something which "exists at all times"; see Brittan (1978, pp. 147-8).

⁵⁴⁰ Blomme (2012, p. 150) rejects of course Kant's method of abstraction or isolation, and in this he is on the same page as Falkenstein (2004, p. 149).

⁵⁴¹ *Logik* §§ 102-5, Ak. 9, pp. 141-3. Vaihinger (1892, pp. 155-6) finds Kant's way of using the term "exposition" is "awkward", but to me it seems at least consistent with how expositions are presented in the *Logic*.

successive synthesis of the marks of a concept, which proceeds from, and immediately takes the form of an analysis:

The exposition of a concept consists in the connecting [*einander hängenden*] (successive) representation of its marks [*Merkmale*], so far these have been found by analysis. (*Logik*, § 105, Ak. 9, p. 143)

The exposition of a given concept is different from the construction of an arbitrarily made concept, like the triangle on a blackboard. Whereas the exposition of a given concept only result in an incomplete analytic definition, the construction of a made concept results in a *synthetic definition*, which is complete. Insofar as the concept, which is analysed, is given a priori, the exposition is metaphysical:

By exposition (*expositio*) I mean the clear, though not necessarily exhaustive, representation of that which belongs to a concept: the exposition is *metaphysical* when it contains that which exhibits the concept as *given a priori*. (B38)

The Metaphysical Exposition of the concept of space is consequently different from the construction of a concept of Euclidean geometry, but it is also different from the exposition of an empirical concept, since it exhibits the concept of space as the concept of an a priori given form of sensibility.

One obvious problem with this account of the Metaphysical Expositions is that it seems inconsistent with Kant's declaration that the originally given space is a form of sensibility. As for instance Falkenstein points out, this view suggests that we cannot have any knowledge of the original space, for as a pure intuition it is indeterminate ("blind").⁵⁴² The form that has been separated and isolated from the sensations and concepts of understanding cannot be known as such. Later, in his comments on Kästner, Kant brings attention to this dilemma by pointing out the difference between the immediately and subjectively given metaphysical space and the constructed and objectively given spaces of geometry.⁵⁴³ Whereas the subjective space cannot be brought under geometric concepts, the objective spaces can.

Thus, the topic of the Metaphysical Exposition is the concept of the original, subjective space, not the concepts of Euclidean spaces. The original space is not given to us in a pure, formal intuition; rather it is immediately given to us as a pure form of outer sensibility – a pure intuition of space. This may seem troubling for the kind of exposition Kant wants to undertake, for the concept of the form does not seem to be any more determinate than the form itself. The situation seems to be that only a figurative synthesis of the imagination can provide the concept of space with a determinate content, in agreement with the conceptualist interpretation discussed in the previous section. It is only the concept of geometric spaces that can be constructed and therefore exhibited.

None of this seems a devastating blow against the possibility of an exposition of the concept of an originally given space, if understanding has access to some determination of space, which belongs to it originally, prior to the figurative syntheses of imagination, which occurs in the construction of the concepts of Euclidean geometry. In the isolation passage quoted above (A20-1/B35), Kant gives two candidates for such a determination, namely extension (*Ausdehnung*) and figure (*Gestalt*). Figure it cannot be, for it is the product of a figurative synthesis of the imagination, but extension is a possible candidate. This extension is not the extension of the bodies, but the

⁵⁴² Falkenstein (2004, pp. 55-7).

⁵⁴³ *Über Kästners Abhandlungen*, Ak. 20, p. 420.

extension of the pure space, which Locke was looking for but could not find, according to Leibniz.⁵⁴⁴

If this is true, it follows that the exposition of the concept of extension, which gives access to a pure knowledge of the original, metaphysical space, which is different from, and in some sense even prior to, the kind of pure knowledge we have in Euclidean geometry. Thus, the Metaphysical Exposition exhibits how space is given to us, prior to its geometrical determinations. Kant expresses this view in the following way in his comments on Kästner:

Metaphysics must show how one can have the representation of space, geometry however teaches how one can describe a space, viz., exhibit one in the representation a priori (not by drawing). In the former, space is considered in the way it is given, before all determination of it in conformity with a certain concept of object. In the latter, one [i.e. a space] is constructed [*gemacht*].⁵⁴⁵ (*On Kästner's Treatise*, p. 307, Ak. 20, p. 419)

The metaphysical originally given space is hence not a space within the boundaries of a geometric figure, but a presupposition for the representation of any such space. From this it follows that the originally given space is indivisible, for all spaces within boundaries are parts of the same unlimited space.⁵⁴⁶ Space is hence originally given as an actually infinite unity, with potentially infinite parts, which means that it is given as a continuous quantity, i.e. as a whole, which contains an indeterminate multitude of parts.

From this Metaphysical Exposition of the concept of space Kant concludes it is possible to show that space is originally presented to us in an a priori intuition. For as the ground of outer intuitions, it must be given to us a priori, and as an indivisible whole of potentially infinite parts it must be unique and therefore presented to us in an intuition.⁵⁴⁷ Taken together, these two points seems to cover Kant's declaration that the Transcendental Aesthetic is about the origin of the knowledge of space (and time). However, it could also be argued that the Metaphysical Exposition (at least taken together with the Transcendental Exposition) also covers the issue of the validity of the knowledge

⁵⁴⁴ Thus, Kant's metaphysical space comes quite close to Locke's pure space (Chapter 4), i.e. a pure, indivisible, infinite unity, without real separable parts. To me it seems as if Kant's metaphysical space also comes quite close to how extension is conceived by Spinoza, in the famous scholion to proposition 15, in the second part of the *Ethics*. Viljanen (2007, p. 119) effectively summarises this scholion in the following way: "Spinoza makes there a distinction between two ways of conceiving extended nature. He claims that those who are inclined to divide extension attend to it only superficially, as it appears to our senses, and consequently find it to be composed of parts. But if the intellect attends to extended nature as a substance, Spinoza insists that 'it will be found to be infinite, unique, and indivisible' (E1p15s)." However, with this said, Kant will of course deny that we attend to metaphysical space as an attribute of a substance, for space is not an attribute of God, but the phenomenon of his omnipresence.

⁵⁴⁵ Translation by Onof/Schulking.

⁵⁴⁶ To be exact Kant reserves the term "unlimited" for the "negative representation of the greatest: "The greatest [*maximi*] is that beyond which nothing larger is possible. The unlimited [*illimitatum*]; is the negative representation of the largest." (LM, p. 192, *Metaphysik Mrongovius*, Ak. 29, p. 834)

⁵⁴⁷ In the introduction to the Transcendental Aesthetic, § 1, Kant explains that he is going to take the outer intuition apart from that belongs to our sensations, but also what our understanding thinks about it. However, it is quite clear that the marks, which the Metaphysical Exposition presents to us, can be thought under the pure concepts of understanding, like the concept of ground and whole. However, in the Metaphysical Exposition the pure concepts of an object in general do not serve as concepts under which space is possible as an object of experience and hence as concepts under which its existence is determinable.

of space, namely inasmuch as it shows that space is the condition under which all objects are possible as outer appearances.

An interesting aspect about the question of what space is, is that Kant thinks that the question has another dimension, which we recognise from his discussion of space in the *Inaugural Dissertation*. In this respect, the question of what space is concerns not whether space is a form of sensibility, but whether it is also a form of things and not just a form of sensibility. The what-question is not only a question about the properties of space, but also a question about the reality of space. Surprisingly, Kant thinks that the Metaphysical Exposition can answer this latter question:

What, then, are space and time? Are they real existences [*wirkliche Wesen*]? Are they only determinations or relations of things [*Verhältnisse der Dinge*], yet such as would belong to things even if they were not intuited? Or are space and time such that they belong only to the form of intuition, and therefore to the subjective constitution [*Beschaffenheit*] of our mind [*Gemüts*], apart from which they [*diese Prädikate*] could not be ascribed to anything whatsoever? In order to obtain light upon these questions, let us first give an exposition of the concept of space. (A23/B37-8)

What seems somewhat perplexing here is that Kant just assumes that the question of the reality of space can be answered by an exposition of the concept of space.⁵⁴⁸ More specifically, it does not come out as evident that an exposition of the concept of space could make it possible to decide if space is a relation between things, as Leibniz had argued, or a pure form of sensibility, as Kant argues.

Critics of Kant, like Herman Andreas Pistorius and Johann August Eberhard, who were more or less outspoken Leibnizians, were therefore quick to point out that Kant had neglected the alternative view that the phenomenon of space is both objective and subjective.⁵⁴⁹ In his review, *Erläuterungen über des Herrn Professor Kants Kritik der reinen Vernunft von Joh. Schultze*, published in the journal *Allgemeine deutsche Bibliothek* in 1786, Pistorius had argued that the concept of space is an impure relational concept, which blends elements which are both a posteriori and a priori.⁵⁵⁰ On Pistorius view, the concept of space is a priori and subjective, because it is grounded in the subject. However, it is also empirical and objective, for it is grounded in and represents properties of things in themselves, even though these things are not located in space.⁵⁵¹

Eberhard argued in a somewhat similar fashion. For instance, in the article *Ueber den Ursprung der menschlichen Erkenntniss*, published in *Philosophisches Magazin* 1789, Eberhard argued that space is a well-founded phenomenon, which is both objective and subjective.⁵⁵² The phenomenon of space thus rests on a ground, which is innate (*anerschaffen*) to the soul, namely the form of the sensibility, a limit (*Schranke*) of my power of knowledge.⁵⁵³ Likewise, the concept of space contains

⁵⁴⁸ E.g. Falkenstein (2004, pp. 146-7).

⁵⁴⁹ Even friends of Kant, like Moses Mendelssohn, who professed to be on Leibniz's side, suggested that space and time are partly subjective and partly objective phenomena, as we have seen (Chapter 5, section 6). Time for instance is a phenomenon, according to Mendelssohn, which has both a subjective aspect (continuity) and objective aspect (an order of the succession of objective events); see *Correspondence*, p. 122, Ak. 10, pp. 115-6.

⁵⁵⁰ For an interesting overview of Pistorius' views, see Specht (2014, pp. 9-10, 67- 75).

⁵⁵¹ Things in themselves do not exist in space however. For a discussion of this point see Specht (2014, pp. 67-9). One might perhaps say that the representation of space is partly subjective, partly objective. Interestingly Eberhard expressed similar views with respect to the sensations; see *Ueber den Ursprung der menschlichen Erkenntniss*, pp. 374-5.

⁵⁵² Eberhard, *Ueber den Ursprung der menschlichen Erkenntniss*, pp. 395, 403-4.

⁵⁵³ Eberhard, *Ueber den Ursprung der menschlichen Erkenntniss*, pp. 400-1.

the *general* and *objective* marks (*Merkmale*) of this phenomenon, marks that also are innate to the soul.⁵⁵⁴ However, Eberhard also intimated that the concept of space depends on sensation and abstraction, which make the innate content of the concept of space clear.⁵⁵⁵ Eberhard therefore described the clear concept of space as an “empirical concept” (*empirischer Begriff*), which is abstracted from outer experiences.⁵⁵⁶

From Adolf Trendelenburg and onwards it has therefore been argued that there is a “lacuna” (*Lücke*) in Kant’s proof of the transcendental ideality of space.⁵⁵⁷ Even if Kant is successful in proving that space is an object of an a priori intuition it does not follow that space is not also a determination of things in themselves. Crudely stated, Kant neglected the alternative that space is not just subjective, but also objective. Far from showing that the marks of the concept of space are determinations of a purely subjective space, any serious analysis or exposition of the metaphysical concept of space will show that these marks are objective, albeit innate concepts of understanding (*Verstandesbegriffe*).⁵⁵⁸ In short, Kant’s proof of the transcendental ideality of space is invalid, because it fails to identify and eliminate this third alternative – which is the alternative most faithful to Leibniz’s own theory of space. In order to see if the Leibnizians were justified in their critique, we need to take a closer look at the Metaphysical Exposition.

6.4.1 First Metaphysical Exposition

In the *first* exposition, Kant presents an analysis of the concept of space as the concept of the outer form of sensibility, which is the formal ground of the possibility of an outer intuition. Conceiving the originally given space as a ground presents space as the condition of the ordering of the manifold of either formal or empirical intuitions. Whereas the manifold of the formal intuition covers an a priori manifold of spaces, the manifold of the empirical intuitions also covers an a posteriori manifold of sensations. In the former sense, space is a condition of geometrical constructions; in the latter sense space is a condition of empirical intuitions of outer objects, i.e. objects located outside one another and ourselves in particular.⁵⁵⁹ The first exposition thus puts us in a position to recognise that space is the ground and not a consequence of the ordering of the manifold of the intuitions.

On the basis of the exposition of the concept of the original space, Kant concludes that the representation of space is a priori and not a posteriori. In Kant’s terminology, the original representation of space is not an empirical concept:

Space is not an empirical concept which has been derived [*abgezogen*] from outer experiences. For in order that certain sensations be referred [*bezogen*] to something outside me (that is, to something in another

⁵⁵⁴ Eberhard, *Ueber den Ursprung der menschlichen Erkenntniss*, p. 389.

⁵⁵⁵ Eberhard, *Ueber den Ursprung der menschlichen Erkenntniss*, pp. 400-1.

⁵⁵⁶ Eberhard, *Ueber den Ursprung der menschlichen Erkenntniss*, pp. 400-1.

⁵⁵⁷ Trendelenburg was in his turn attacked by Kuno Fischer who argued that there is no lacuna in Kant’s demonstration; for a review of the debate among Fischer’s contemporaries see Grapengieser (1870) and Vaihinger (1892, pp. 290- 326).

⁵⁵⁸ According to Eberhard all concepts presented by Kant in the Metaphysical Expositions are actually concepts of understanding (*Verstandesbegriffe*); see *Kurze Widerlegung der transcendentalen Aesthetik in der kritischen Philosophie*, in *Philosophisches Magazin*, Volume 4, 1791.

⁵⁵⁹ In the latter sense space is the formal ground of the places, which makes it possible to refer my sensations to an object outside myself.

region [*Orte*] of space from that in which I find myself [*darin ich mich befinde*]), and similarly in order that I may be able to represent them as outside and alongside [*neben*] one another, and accordingly as not only different [*verschieden*] but as in different places, the representation of space must be presupposed [*zum Grunde liegen*]. (A23/B38)

Kant's term "empirical concept" suggests that this passage is directed against the views defended by Leibnizians, like Eberhard for instance. In other words, space is not a concept abstracted from the order of coexistence of things, but on the contrary the ground of the possibility of their coexistence.

In the first exposition Kant argues that the Leibnizian view is wrong, since it ignores that the representation of space underlies all outer empirical intuitions, because it is the condition for a sensation to be "referred to something outside me", that is, to something which is independent of me and my mind. What Kant seems to argue, then, is that sensations (or perhaps more correctly: the empirical intuitions received as a result of them) do not represent anything, unless they represent an object which can be (i) distinguished from what is merely a state of mind and (ii) distinguished from other objects, which are not only qualitatively, but also numerically different from the object.⁵⁶⁰

Hence, without space sensations cannot be related or referred to an object outside myself, for instance to the embodied sense organs or to an object at a distance from the sense organs. Firstly, space is what lets my body appear, in the midst of the world, which also is the place in which I find myself located. Secondly, space makes the things appear outside me, at a determinate distance and in a particular direction from my embodied sense organs. The distance between my eyes and the star above me lets me refer the sensation of light to the star outside me in space, so that I can see the star.

In particular Kant seems, once again, to take space to be necessary in order to *perceive* the things which appear to the senses, making it into a condition for an empirical intuition, which is *clear*. For as we have seen, if an empirical intuition is clear, then it represents an object which is not only distinct from a state of mind, but also distinct from other objects and this presupposes that they are represented as objects located in different spaces. The distinction I make between, for instance the objects viewed by my eyes, presupposes that the objects can be represented at different locations. Finally, Kant's first argument can also be seen as an argument for taking the representation of space as a presupposition for a *distinct* empirical intuition, for a representation cannot be distinct unless I can become aware of the different, spatial parts of the object of the representation, like the different parts of a house, e.g. its roof, chimney, walls, etc.⁵⁶¹

⁵⁶⁰ This interpretation of Kant's first argument is discussed in detail in Allison (1983, pp. 83-4).

⁵⁶¹ Against the first exposition it can, however, be objected that there is a symmetric relation between numerical differences in appearances and numerical differences in spaces, i.e. that there is a mutual dependence between the possibility of representing a numerical diversity of spaces and the possibility of representing a numerical diversity of appearances. As a consequence of this, we cannot argue that the representation of space is *a priori*. However, as various commentators have pointed out, Kant seems to have considered this objection in his second argument for taking space as a pure intuition; see Paton (1997a, p. 112).

6.4.2 Second Metaphysical Exposition

Kant's *second* exposition states that we *can* have a representation of a space without the content of an appearance, but no representation of an outer appearance without the form of space.⁵⁶² The immediately given space is a *necessary* representation, which is presupposed, in order for there to be contingent outer intuitions. The necessity of space shows itself in its nature as a *permanent* background, which never disappears in the continual stream of appearing and disappearing objects. In Kant's terminology, space is a representation which underlies all outer intuitions:

Space is a necessary *a priori* representation, which underlies all outer intuitions [*zum Grunde liegt*]. We can never represent to ourselves the absence of space, though we can quite well think it as empty of objects. It must therefore be regarded as the condition of the possibility of appearances, and not as a determination [*Bestimmung*] dependent upon them. It is an *a priori* representation, which necessarily underlies outer appearances [*zum Grunde liegt*]. (A24/B38-9)

From the second exposition it follows that there must be an asymmetric relation between the representation of different spaces and the representation of numerically different appearances. Whereas an empty space without objects is conceivable, an outer appearance without a spatial location is not.⁵⁶³ To put it differently, the representation of numerically different spaces does not depend on the representation of things which are numerically different because of their inner differences. Leibniz's principle of identity of indiscernibles does not apply to objects in space. Hence, the representation of space is a necessary *a priori* representation, in which nothing can be derived from outer senses, or from common sense.

The Leibnizian Johann G. Maass (1766-1823) questioned Kant's conclusion in a polemical article printed in the first volume of Eberhard's *Philosophisches Magazin* 1788.⁵⁶⁴ According to Maass, representation A may be a necessary ground or condition of the possibility of representation B, but from this conceptual dependence, it does not follow that A is *a priori*. The necessity of A does not exclude the possibility that A is originally represented together with B, and that A is acquired by being separated and abstracted from B. The representation of space (A) is a condition of the representation of outer appearances (B), but there is no original representation of space apart from the appearances, i.e. merely as an order of compossible situations.

To this objection Allison has replied that Maass presents space and the outer appearances as mutual conditions.⁵⁶⁵ This ignores that space is a "means or vehicle" of representing them as distinct from each other and ourselves, which excludes the possibility of a reverse conditioning from outer appearances to space.⁵⁶⁶ The representation of outer appearances as distinct from each other and ourselves is, in other words, not a condition of the representation of space. However, Kant could also point out that Maass' argument entails that the representation of space is an empirical concept, which is inconsistent with the apodictic nature of the postulates and propositions of Euclidean geometry. This is also what Kant tries to argue in the Transcendental Exposition. More

⁵⁶² By the term "outer appearance" is here of course meant an appearance, which is not merely an inner appearance, i.e. a state of mind.

⁵⁶³ Kant does not build his argument on the contention that we have a *sense* for empty space. We cannot sense or experience, empty space. For a similar argument, see Paton (1997a, pp. 112-3).

⁵⁶⁴ Maass, *Ueber die transcendente Aesthetik*, in *Philosophisches Magazin*, Volume 1, 1788, pp. 123-9.

⁵⁶⁵ Allison (1983, pp. 84-90).

⁵⁶⁶ Allison (1983, p. 85).

importantly, although an order can be represented apart from the things which are situated in it, this only leads to the abstract concept of situation or place, not the concept of the original phenomenon of space as a continuous whole.

6.4.3 Third Metaphysical Exposition

In the *third* exposition, Kant presents an analysis of the concept of space, not as the concept of a ground, but as the concept of a whole. Once again, the concept which Kant has in mind, is the metaphysical concept of space, which gets its content from the form of sensibility. Taken as a whole, space is *unique*. Kant supports this by underlining that our awareness of space involves the consciousness of only *one* space. Thus, like the pure space of Locke, the metaphysical space does not consist of real separable parts, which means that diverse spaces are possible only as ideal inseparable parts of the same *indivisible* and unique space. Space is in other words immediately represented as a whole (*totum analyticum*), which has the peculiar property that it is prior to its parts, for the parts of space are the outcome of the limitation of the all-encompassing space.⁵⁶⁷

From this Kant concludes that space is an altogether singular representation. Space is in other words not a concept, but an intuition:

Space is not discursive or, as we say, general concept of relations of things in general, but a pure intuition. For, in the first place, we can represent to ourselves only one [*einigen*] space; and if we speak of diverse spaces, we mean thereby only parts of one and the same unique [*alleinigen*] space. (A24/B39)

The concept of space is not, as Eberhard argued, abstracted from the order under which it is possible for things to coexist, but a singular idea of outsideness and therefore an intuition. Kant expresses this by emphasising that the representation of space is not a general concept of relations of “things in general”.

In the third exposition, Kant also argues for the same conclusion on the premise that the parts of a concept are prior to the whole concept. The parts of space are different in that respect:

(...) these parts cannot precede the one all-embracing [*allbefassenden*] space, as being, as it were, constituents out of which it can be composed; on the contrary, they can be thought only *in it*. Space is essentially one; the manifold in it, and therefore the concept of spaces, depends solely on the introduction of limitations. Hence it follows that an *a priori*, and not an empirical, intuition underlies all concepts of space. (A25/B39)

Here Kant obviously builds on an exposition of space as a continuous *totum analyticum*.⁵⁶⁸ There are no largest or smallest (simple) parts in space, as Kant had recognised already in the *Physical Monadology*, and no definite limits within which it is enclosed. Hence, the all-encompassing and unlimited space is always originally represented prior to its parts.

⁵⁶⁷ Space is, as Kant puts it in the observation to the second antinomy (A438/B466), a *totum*, not a *compositum* in which the whole is possible only through the parts.

⁵⁶⁸ This seems to be what Kant maintains in his fourth argument; Kant also explicitly affirms that this is his position in A169/B211 and in some of the lectures on metaphysics. In *Metaphysik L₂*, Ak. 28, p. 561, for instance, Kant explains that space and times are continuous quantities, or somewhat misleadingly: continuous quanta.

To Kant the latter indicates that space cannot originate from a concept (or at least not an empirical concept), since concepts depend on the prior representation of parts. The parts of the concepts are, as pointed out by Kemp Smith and Paton, the “attributes”,⁵⁶⁹ or “common marks”⁵⁷⁰ thought under the concept, and the concept is the result of a combination of these parts. The concept is logically prior to the marks thought under it only insofar as it is clarified and made distinct. In addition to this somewhat blunt reconstruction of Kant’s argument Paton adds the point that space, if it were a concept, would have to be derived from a reflection upon the common mark of different spaces (places), namely that they are “necessarily limited”.⁵⁷¹ Such a mark would, however, presuppose the representation of an all-including space, which is an intuition.

6.4.4 Fourth Metaphysical Exposition

In the *fourth* exposition, Kant tries to show that space is not a concept, not because it is one unique, continuous magnitude, but because it is represented as an *infinite given* magnitude.⁵⁷² Since the originally given aesthetic space of our sensibility is not a part of another space, it is unlimited and greater than any other space.⁵⁷³ Thus, we may make the parts of space as small or great as we want without ever encountering any limits or boundaries. The important lesson here is that metaphysical space must have an infinite multitude of possible *representations* contained *within* it, a claim which we recognise from the *Inaugural Dissertation* (§ 15). Kant contrasts this with the infinity of the concept, which typically contains an infinite multitude of possible *instances* (“representations”) *under* it:

Space is represented as an infinite (*unendliche*) *given* magnitude. Now every concept must be thought of as a representation which is contained in an infinite number (*Menge*) of different possible representations (as their common character), and which therefore contains these *under* itself; but no concept, as such, can be thought as containing an infinite number (*Menge*) of representations *within* itself. It is in this latter way, however, that space is thought; for all the parts of space coexist ad infinitum. Consequently, the original representation of space is an *a priori* intuition, not a concept. (B39-40)

Thus, whereas space contains a potential infinity of coordinated parts, a concept contains an infinity of possible representations subordinated under it, as its common mark. For instance, the concept of a polygon contains all triangles on the blackboard. The relation between the concept of a polygon and the triangles is a logical relation, a relation of containment, based on subordination of concepts. Thus, the triangles are included in the sphere of the concept of a polygon. The triangles are, however, not in the logical sphere of the concept of polygon, in the same sense as a shoe is in a

⁵⁶⁹ Kemp Smith (1999, p. 105).

⁵⁷⁰ Paton (1997a, p. 119).

⁵⁷¹ Paton (1997a, p. 116). Unnecessarily to point out this reconstruction presupposes that the concept is empirical and that the original representation of space must be an intuition, unless it is an empirical concept. The alternative that space for instance might be a non-empirical, a discursive pure concept of understanding, a category, is then excluded beforehand.

⁵⁷² B39-40.

⁵⁷³ C.f. LM, p. 192, *Metaphysik Morgovius*, Ak. 29, p. 834.

shoebox. If space were a concept, then it would have to be exemplified in the particular spaces, and they would not be *in* it. Thus, space must be an intuition.⁵⁷⁴

The problem with Kant's fourth exposition, as pointed out by Kästner in an article published in *Philosophisches Magazin* 1790, is that it seems to presuppose that we have an image of an *actually infinite* space. This is impossible, however, for the only images we have are of potentially infinite or unlimited (*unbegränzt*) geometric spaces.⁵⁷⁵ In his reply to Kästner, Kant freely admits that geometric spaces are infinite because the possibility of increasing them or decreasing them is unlimited.⁵⁷⁶ This makes them different from the original, metaphysical space, which is infinite, because it encompasses all spaces, making all other spaces are thinkable, only as parts of it.⁵⁷⁷ The originally given space within which I can draw a line, for instance, is larger than any other line which I may draw in it.

More recently, Onof and Schulting have pointed out that Kant defended the view that the metaphysical space must be given as an actually infinite magnitude.⁵⁷⁸ In this respect, Kant supports

⁵⁷⁴ As Paton points out, Kant makes his arguments even more difficult by often saying that space is a pure intuition. See Paton (1997a, pp. 104-05, 115, footnote 2).

⁵⁷⁵ Kästner, *Ueber den Mathematischen Begriffs des Raums*, § 13, p. 407. To be more exact a geometric space, like a line, is indeterminate only quantitatively but not qualitatively.

⁵⁷⁶ On Kästner's *Treatise*, pp. 309-10, Ak. 20, pp. 420-1.

⁵⁷⁷ On Kästner's *Treatise*, p. 309, Ak. 20, pp. 419-20.

⁵⁷⁸ Onof/Schulting (2014, pp. 287-90). See also Fichant (2004, pp. 537) for an overview of the opposite properties of metaphysical and geometric space. Lydia Patton (2011) summarises the contemporary debate on the a priori givenness of actually infinite space in a recent paper. Broadly, this debate can be divided along the same lines as the phenomenalist and conceptualist ("epistemic") accounts of metaphysical space mentioned above. In Patton's (2011, pp. 275-87) summary Charles Parsons figures as one of the main proponents of the phenomenalist accounts, whereas Michael Friedman is selected as the main representative of the conceptualist accounts. Parsons (1998), quoted in Patton (2011, pp. 276-7), recognises that subjective space shows itself in the continuity of geometric constructions, such as a line for instance. However, Parsons claims that the continuity of space is incompatible with its actual infinity, since it would force us to represent an infinity of parts, e.g. the infinite parts of a line. Instead, Parsons suggests that the continuity can be described in terms of continuability, i.e. the possibility of continuously moving our attention from foreground to background and from background to foreground, as we outline a figure against its horizon. Against Parsons, Friedman (2000), discussed and quoted in Patton (2011, pp. 275-79), firmly relocates the infinite in the geometric construction, e.g. the construction of a line. Infinite space is given in the continuity of the construction of the line, in particular the possibility of constructing it in many and opposite directions and viewing it from many and opposite points of view. However, as Patton (2011, pp. 277-8) points out, according to critics like Emily Carson (1997), Friedman does not make a proper distinction between metaphysical space and constructed spaces. Thus, Friedman ignores that the unique and boundless metaphysical space grounds and is given prior to and independently of the spaces that are constructed in Euclidean geometry. In his turn Friedman (2000), quoted in Patton (2011, p. 278), has replied that we have no direct "perceptual" access to infinity and in particular not to the actual infinity of metaphysical space, which seems to undermine the legitimacy of Carson's critique. Patton partly agrees with Friedman, even though she denies that Friedman successfully explains the origin of the oneness of metaphysical space. On Patton's (2011, pp. 279-80) reading we have to presuppose metaphysical space in order to represent the possibility of rigid motions by the means of rotations and translations. Patton does not explicitly mention it, but rotations and translations are presupposed in order to determine if a figure is congruent with another figure. Thus, perspective alterations make it possible to view directed geometric spaces, e.g. lines, not as fluxion magnitudes, i.e. vectors, but as magnitudes without direction, i.e. scalars. On Patton's (2011, pp. 283-7) reading metaphysical space is revealed to us as an outcome of perspective alterations with respect to vector constructions. From this she concludes that the infinity of metaphysical space consists in the fact that the scalars exhaust all vectors, i.e. all temporal vector constructions. In my opinion, Patton's observation on scalars creates difficulties of their own. One of them is to explain how metaphysical space is a priori given. Congruent spatial orders, i.e. scalars, are not immediately given, but constructed. Furthermore, though a scalar is different from a vector, it is still strongly similar to an objective geometric space. True, Patton (2011, p. 288) does not reduce metaphysical space to a scalar, but considers metaphysical space as a set of scalars or "relations that are neutral in orientation". However, with that said we have still not answered in

himself on a distinction between the *infinito potentiali* and the *actu infinitum*, which can be found in the works of the English mathematician Joseph Raphson (1648-1715).⁵⁷⁹ Whereas the *infinito potentiali* exclusively holds for the mathematically constructed spaces, the *actu infinitum* is “in the mind”, as Onof and Schulting put it. From this Kant also seems to argue that we can conclude the “subjective ground of the possibility of space”, and hence also the ideality of space.⁵⁸⁰

On this interpretation, a number of things can be said. First, it should be noted that Kant’s argument is somewhat difficult to follow, namely because it is difficult to know if Kant reads “*actu infinitum*” as “infinite in actuality” or “infinite in act”. The reply to Kästner does not give any clue as far as I can see, but on the basis of what Kant says on other occasions about the infinity of space, I cannot come up with any example where Kant explicitly speaks about space as actually infinite – unless one reads “infinite given magnitude” (B39-40) as immediately referring to an actual infinite magnitude.⁵⁸¹ Secondly, it seems as if this reading puts Kant in the rather ungrateful position of having to defend the concept of a categorematic whole, in other words the concept of a greatest number, which Kant rejected, along with Leibniz.

To avoid this conclusion, I suggest that Kant takes the metaphysical space to be actually infinite, not because it is a whole which contains an actual infinity of parts (a categorematic whole), but because it is absolute. Thus metaphysical space is never a region of a greater, more all-encompassing space. This makes the metaphysical space different from its parts, which are constructible under geometric concepts and therefore merely potentially infinite. Kant expresses his position in the following way in his reply to Kästner’s criticisms:

Now that the geometrically and objectively given space is always finite agrees completely with this; for it is only given through its being constructed (*gemacht*). That, however, the metaphysically, i.e. originally, nonetheless merely subjectively given space, which (because there is no plurality thereof) cannot be brought under any concept which would be constructible, but to be sure contains the ground of the construction of all possible geometrical concepts, is infinite only indicates that it consists in the pure form of the sensible mode of representation of the subject, as a priori intuition; hence in this, as singular representation, the possibility of all spaces, which goes to infinity, is given. (*On Kästner’s Treatise*, p. 309, Ak. 20, pp. 420-1)

To add some detail to this argument it is helpful to consider it against the background of the model the hypercategorematic infinite of Leibniz’s God.⁵⁸² In this model, God is infinite because he is the most perfect being which contains all things. Thus all things are contained in God either eminently, as perfections in his essence, or ideally, as imperfections in his mind.⁵⁸³ Furthermore, all things which are contained in God eminently may be contained in God either actually or potentially.⁵⁸⁴ For instance, power is in God eminently, but the power to move is only potentially in God, insofar as God is the ground or cause of the power to move. However, none of this makes

what sense this set is immediately given to us. Finally, it is far from clear if metaphysical space is actually infinite, i.e. that it is infinite in any other sense than that it contains a potentially infinite number of vector spaces.

⁵⁷⁹ Onof/Schulting (2014, pp. 288-9).

⁵⁸⁰ *On Kästner’s Treatise*, pp. 309-10, Ak. 20, pp. 421-2.

⁵⁸¹ Such an interpretation is, as far as I can see, defended by Vaihinger (1892, p. 254).

⁵⁸² See Chapter 4, section 4.3. For an overview of this topic, see Antognazza (2015).

⁵⁸³ Antognazza (2015, pp. 14-17).

⁵⁸⁴ Antognazza (2015, pp. 16-18).

God into a whole of actually or potentially infinite parts. Potential infinity belongs to God only eminently as the virtually present ground and cause of the perfections and divisions of all finite things. Furthermore, actual infinity belongs to God only eminently as an absolute unity considered above and apart from all divisions.

Now, metaphysical space is not infinite in the same way as God, i.e. space is not hypercategorically infinite. Unlike God, metaphysical space is an analytic whole of potentially infinite parts. But like God, metaphysical space is infinite in another way, namely because it is unlimited in the sense that it is an absolute whole, a whole which is not a part of another whole. Thus, metaphysical space is a subjective form of sensibility, which grounds all spaces in a way similar to how God contains the perfections of finite things eminently, namely potentially.

In many ways this seems to licence no other view than the one most often repeated in this work, namely that space is a whole of potentially infinite parts. However, with this said metaphysical space does not contain its parts merely in the same distant way as a ground contains its consequences. Thus, metaphysical space contains its parts more intimately, within the bosom of its own unity, though without dividing it, which means that it preserves its undivided oneness, its unity *sui generis*, without which space would become a synthetic whole rather than a continuous, analytic whole.⁵⁸⁵ Space is “essentially one” as Kant puts it.⁵⁸⁶ In the same way as God is actually infinite insofar as he contains all perfections eminently within the undivided unity of his essence, metaphysical space is actually infinite insofar as it contains every space within the unlimited and undivided unity of its oneness. It is in this sense we might say that the actual infinity of metaphysical space is given immediately in pure intuition, for infinity is contained within its original unity, a unity which is not constructed and mediated by any concepts.

6.5 Kant’s Conclusions from the Metaphysical Expositions

Kant presents the conclusions from the expositions of the concept of space in a summary, divided into five paragraphs. The title of the summary is quite modest: “Conclusions from the above Concepts” (*Schlüsse aus obigen Begriffen*). The “concepts” Kant has in mind here are most likely the concepts that he presented in his exposition of space as a necessary, singular (unique), and continuous whole, which is prior to its progressively and regressively indefinite parts. Thus, Vaihinger seems to be on the right track when he takes the “above concepts” to involve the “determinations of the essence of space” (*Bestimmungen über das Wesen des Raumes*), which have been “discovered” (*aufgefunden*) and “established” (*festgestellt*) as a result of the expositions.⁵⁸⁷

⁵⁸⁵ As Onof/Schulting (2014, p. 295) correctly points out the *sui generis* unity of metaphysical space is internal to it as a form of sensibility. More specifically, it does not originate from the forms of understanding: “It is not a conceptual unity because it is not a unity of a multiplicity of representations that are contained under a higher one (A69/B94; A78/B104) and there are no grounds for viewing the understanding as involved in defining this unity. Rather, it is the internal unity of the space in which manifolds in intuition are first represented. The pure receptivity of our faculty of sensibility defines a unity which Kant describes at A25/B39 as the ‘single all-encompassing space’ whose parts are ‘only thought in it’. This characterizes the metaphysical space of *On Kästner’s Treatises* in its original givenness. (...) The unity of this unitary space is the unity that Kant refers to when he claims that a single representation is always a unity (A99): i.e. a single representation is always an ‘absolute unity’, which is different from the unity that the understanding brings to the manifold.”

⁵⁸⁶ A25/B39

⁵⁸⁷ Here Vaihinger (1894, p. 286)

In the *first* paragraph (A26a/B42a) Kant presents his core claim, namely that the expositions make it possible to conclude that space does not represent any properties or relations⁵⁸⁸ of “things in themselves”:

Space does not represent any property of things in themselves, nor does it represent them in their relations to one another. That is to say, space does not represent any determination [*Bestimmung*] that attaches to the objects themselves, and which remains even when abstraction has been made of all the subjective conditions of intuition. For no determinations, whether absolute or relative, can be intuited prior to the existence of the things to which they belong, and none, therefore, can be intuited *a priori*. Space is nothing but the form of all appearances of outer sense. It is the subjective condition of sensibility, under which alone outer intuition is possible for us. (A26/B42)

Kant’s premise here seems to be that the exposition of the concept of space already has shown that the original representation of space is an *a priori* intuition. From this premise we are entitled to conclude not only that the representation of space is not an empirical concept, as Leibnizians like Eberhard argued, but also that space cannot be anything but a purely subjective form of sensibility.⁵⁸⁹ For if space is an absolute or relative property of things in themselves, then there is no *a priori* representation of space, which is prior to the empirical representations of the spatial properties of things in themselves. However, as the Metaphysical Exposition shows, there is an *a priori* intuition of space.⁵⁹⁰ Hence, space is not an absolute or relational property of things in themselves, but merely a form of sensibility.

The subsequent *second* paragraph (A26b/B42b) contains the positive conclusions from the expositions of the concept of space:

Space is nothing but the form of all appearances of outer sense. It is the subjective condition of sensibility [*subjective Bedingung der Sinnlichkeit*], under which alone outer intuition is possible for us. Since, then, the receptivity of the subject, its capacity to be affected by objects, must necessarily precede all intuitions of these objects [*vor allen Anschauungen dieser Objekte vorhergeht*], it can readily be understood how the form of all appearances can be given prior to all actual perceptions [*Wahrnehmungen*], and so exist in the mind *a priori*, and how, as a pure intuition, in which all objects must be determined, it can contain, prior to all experience, principles which determine the relations of these objects. (A26/B42)

Here Kant does three things. First, he repeats what he thinks is the main accomplishment of the expositions of the subjective concept of space, i.e. the concept of the necessary form of outer sensibility, namely that space is the content of a pure intuition.⁵⁹¹ Secondly, on the basis of the transcendental ideality claim presented in the previous paragraph, he concludes that space is nothing

⁵⁸⁸ Kant’s critique of More’s, Clarke’s and Newton’s concepts of space is more explicitly presented in A39/B56, as well as in B70-1.

⁵⁸⁹ Eberhard, *Ueber den Ursprung der menschlichen Erkenntniss*, p. 400. As Vaihinger (1892, pp. 287- 90) puts it, Kant suggests that we can infer from the apriority of space to its subjectivity.

⁵⁹⁰ As we recall, Kant had suggested this argument for the transcendental ideality of space already in the late 1770s.

⁵⁹¹ On the reading defended here, Kant’s sole concern is the exposition of the original, metaphysical concept of space, i.e. the concept of the form of outer sensibility. Thus, on my reading the claim that space is the “subjective condition of sensibility” it is not smuggled into paragraph (b) from nowhere, as Kemp Smith (1999, pp. 114-5) and Vaihinger (1894, pp. 326-7) argue.

but the form, which makes outer appearances become related outside each other. Thirdly, he concludes that space is a form given prior to all outer intuitions, which as a pure intuition contains the (geometric) principles according to which the relations of these objects are determinable. It is as a form by which appearances become related to each other that space is real. This explains how Euclidean geometry, which is synthetic and a priori, can apply to the things we perceive and experience.

Kant's conclusion in the first and second paragraphs brings us back to the debate about a third alternative. Does the Metaphysical Exposition demonstrate that the transcendental ideality of space follows merely from the Metaphysical Exposition of space, in a way which excludes the third alternative? In other words, does the Metaphysical Exposition demonstrate that the transcendental ideality of space follows merely from an exposition of it as a singular, continuous, all-encompassing whole, which is prior to its potentially infinite parts?

To gain greater understanding about Kant's demonstration of the transcendental ideality claim, it is helpful to consider it against the background of the alternative to it, which was suggested by Kant's Leibnizian critics. This alternative is mostly forgotten today and did not play any significant role even for Trendelenburg, who was the progenitor of the contemporary debate about the third alternative. The interesting thing about the Leibnizian alternative is of course that it was actually suggested to Kant, more or less personally. This means that we have first-hand information about Kant's attitude to the Leibnizian version of the third alternative, and whether Kant neglected it or not. To get a grip on the alternative suggested by the Leibnizians, it is helpful to give a brief overview of its main components.

First, the Leibnizian alternative has to say something about how space is represented. Here the Leibnizians considered two options: the representation of space is (a) an a priori intuition, or (b) an empirical concept. Secondly, the Leibnizian alternative has to say something about the ontological status of space. Here the Leibnizians considered three options: space is (c) transcendently ideal, (d) transcendently real, and (e) in part transcendently real and in part transcendently ideal. From what we know about the views defended by Pistorius and Eberhard, we can now describe the Leibnizian alternative as a combination of option (b) and (e). Finally, we can contrast the Leibnizian alternative with Kant's alternative, which can be described as a combination of option (a) and (c). Let us now discuss the Leibnizian alternative and the arguments for it somewhat closer.

6.5.1 Arguments for Option (b)

In order to inform ourselves about the arguments for thinking that the representation of space is an empirical concept, we need to consider Pistorius' and Eberhard's critiques of Kant's Metaphysical Exposition in some closer detail. To emphasise the specificities of Eberhard's critique it is helpful to qualify option (b) somewhat. First, we can speak about the concept of space as an empirical concept in a weak way, which more or less coincides with Eberhard's version of (b). Typical of the weak version of (b) is that the concept of space only contains predicates which are originally innate, a priori concepts of understanding. The concept of space is, to repeat, empirical only in the sense that sensation and abstraction is needed in order to make us aware of these predicates.⁵⁹²

⁵⁹² Eberhard, *Ueber den Ursprung der menschlichen Erkenntniss*, pp. 400-1. One historically important side-aspect of Eberhard's claim is that all predicates presented in the Metaphysical Exposition of the concept of space actually are concepts of understanding. Eberhard makes this claim in the paper *Kurze Wiederlegung der transcendentalen Aesthetik in der Kritischen Philosophie*, pp. 188-9, which was

The justification of the weak version of (b) therefore takes the form of a refutation of the Metaphysical Expositions. According to Eberhard, the Metaphysical Exposition tries to demonstrate that space is an a priori intuition, but this is self-contradictory. Only the concept of space is a priori, but the concept of space is not a sensible intuition. Implicitly, the thesis of the Metaphysical Exposition is contradictory for it suggests that an a priori, intelligible, general, and superior thing is an a posteriori, sensible, singular, and inferior thing.⁵⁹³ Furthermore, the predicates, which collectively can be ascribed to space in general, cannot be ascribed to an allegedly a priori, pure intuition without contradiction. Space in general is necessarily possible, “uniform” (*gleichförmig*), all-encompassing (one) and infinite (indeterminate), which singular spaces cannot be since they are possible but bounded and finite.⁵⁹⁴

Secondly, we can speak about the concept of space as an empirical concept in a stronger way, which is more or less identical with Pistorius’ version of (b). On the stronger version of (b), some, but not all, predicates are a priori and innate. Some predicates, thought under the concept of space, are genuinely and originally a posteriori and empirical in a sense, which the weak version does not allow. Insofar as this is the case the concept of space is (or resembles) an empirical concept.⁵⁹⁵ For instance, the concept of the infinity/immeasurability of space is the concept of a finite, perceived space, insofar as it is indefinitely extended in our imagination.⁵⁹⁶ It is not an innate concept of the indeterminateness of space as a place of all places, as Leibniz would have it, but rather an empirical concept, formed more or less in the same way as Locke’s idea of infinite space (see Chapter 4).

6.5.2 Arguments for Option (e)

To sort out the details of (e) a little bit more carefully it is helpful to repeat that Leibnizians, like Pistorius and Eberhard, interpreted Kant’s Metaphysical Exposition as an attempt to exhibit the

published in *Philosophisches Magazin*, Volume 4 1791. Using Kant’s 1760s taxonomy, we can perhaps say that Eberhard describes the concept of space as a pure concept of reflection, although we acquire it in the same way as an empirical concept of reflection.

⁵⁹³ Eberhard, *Kurze Wiederlegung der transcendentalen Aesthetik in der Kritischen Philosophie*, pp. 188-191.

⁵⁹⁴ Eberhard, *Kurze Wiederlegung der transcendentalen Aesthetik in der Kritischen Philosophie*, pp. 191-3. On my interpretation Eberhard’s argument is meant to show that none of the predicates, which allegedly are derived from an original, pure intuition, could have been derived from anything except the concept of space in general. For example, different instances of space in general cannot be distinguished by any inner, quantitative or qualitative marks, which means that they are perfectly congruent with each other. From this it follows that space in general is uniform. Intuition could only present us to the spaces of different singular things, which presumably are subject to the principle of the identity of indiscernibles, which means that they necessarily are internally different from each other. Only abstraction from these inner differences, which leads to the concept of space in general, can take us to the concept of uniformity and congruency. On the other hand, it seems perfectly possible that these spaces are congruent with themselves, which Eberhard seemingly ignores. What Eberhard perhaps has in mind is that spaces of singular things cannot combine congruency (with themselves) with the property of being all-encompassing and infinite, which belongs to space in general only, according to Eberhard. For space in general is all-encompassing insofar it contains all spaces as instances of itself and it is infinite insofar it is indeterminate, which is impossible for singular spaces.

⁵⁹⁵ Pistorius, *Erläuterungen über des Herrn Professor Kants Kritik der reinen Vernunft von Joh. Schultze*, pp. 100-1.

⁵⁹⁶ Pistorius, *Erläuterungen über des Herrn Professor Kants Kritik der reinen Vernunft von Joh. Schultze*, pp. 105-6.

subjectively grounded marks, which cannot belong to space except as a purely ideal phenomenon. In the terminology of Pistorius and Eberhard such marks are a priori, subjective predicates of the phenomenon of space. The Leibnizians will therefore have to show that Kant is mistaken in either of the following ways: (i) the a priori predicates are in reality both subjectively and objectively grounded, namely subjectively grounded in the limits of the force of representation and objectively grounded in the things in themselves; (ii) the a priori predicates are subjectively grounded, but the concept of space includes some a posteriori marks, which are objectively grounded and which Kant's Metaphysical Exposition fails to identify. In both cases, it follows that space is a well-founded phenomenon, in agreement with (e).

The first line of attack (i) comes quite close to Eberhard's position. On Eberhard's view, the concept of space includes predicates which are altogether a priori, even though we become aware of them as a result of sensation and abstraction. None of these concepts are abstracted from pure intuition, as we have seen, but are innate to the understanding. They are a priori predicates, but still objectively grounded. To these predicates Eberhard counts the concept of space in general. Space in general is an abstract, "intelligible space" (*der intelligible Raum*), i.e. a mere order or "combination" (*Verknüpfung*) of coexisting things.⁵⁹⁷ Space in general is therefore grounded in the combination of coexisting simple substances, which is the objective and actual space according to Eberhard.⁵⁹⁸

Thus, on Eberhard's arguments, Kant's transcendental ideality claim is invalid, since it ignores that the phenomenon of space must have an objective ground in the actual space. In the opposite case, if the phenomenal space is merely subjectively grounded, space becomes a *qualitas occulta*, i.e. something which lacks sufficient reason for its existence other than as a mere state of mind or perhaps illusion.⁵⁹⁹ Hence, the concept of a combination or order of coexisting, ultimately simple things must have an objective ground, which makes the concept valid, contrary to what Kant claims.

Eberhard also recognises that the concept of space contains other predicates, which are a priori, such as the concept of continuous coexistence. In the article *Von den Begriffen des Raums und der Zeit in Beziehung auf die Gewissheit der menschlichen Erkenntniss*, from 1789, Eberhard makes a somewhat half-hearted attempt to argue that the continuity is objectively grounded in the order of coexistence of simple substances.⁶⁰⁰ However, ultimately, Eberhard concedes that the continuity cannot be derived from the order of coexistence of simple substances.⁶⁰¹ Continuity is "peculiar" (*Eigentümlich*) to the image or phenomenon of space and not, as Eberhard admits, grounded in the

⁵⁹⁷ Eberhard *Von den Begriffen des Raums und der Zeit in Beziehung auf die Gewissheit der menschlichen Erkenntniss*, pp. 66-7.

⁵⁹⁸ Eberhard *Von den Begriffen des Raums und der Zeit in Beziehung auf die Gewissheit der menschlichen Erkenntniss*, pp. 58-9, 66-7. It must be noted that Eberhard's analysis of the relation between simple substances and actual space is not perfectly clear cut. For instance, in *Ueber die logische Wahrheit oder die transcendentale Gültigkeit der menschlichen Erkenntniss*, in *Philosophisches Magazin*, Volume 1 1788, pp. 169-70, Eberhard describes the elementary representations as the ground of the concrete time, the succession of representations, and not as the actual time itself. If this analysis is applied to space it would follow that the coexistence of simple substances is the ground of the concrete, phenomenal space, rather than the actual space itself.

⁵⁹⁹ Eberhard, *Ueber den Ursprung des menschlichen Erkenntniss*, pp. 403-4.

⁶⁰⁰ Eberhard *Von den Begriffen des Raums und der Zeit in Beziehung auf die Gewissheit der menschlichen Erkenntniss*, pp. 59-60. The concept of space as an order does not entail that this order is continuous, as already Leibniz noted (Chapter 4), but lies within our way of perceiving it.

⁶⁰¹ Eberhard *Von den Begriffen des Raums und der Zeit in Beziehung auf die Gewissheit der menschlichen Erkenntniss*, pp. 59-60.

actual space.⁶⁰² Continuous diffusion and combination are hence irreducible marks of confused/indistinct perceptions, grounded in the limit (form) of the force of representation.⁶⁰³ Space in this sense is a form of perception, which makes it not only transcendently real, but ideal or rather transcendently ideal, as perhaps even Leibniz would admit, namely because it is constitutive of the original phenomenon of extension.

The second line of attack (ii) comes closer to Pistorius' critique of Kant's transcendental ideality claim. Like Eberhard, Pistorius argues that space is a well-founded phenomenon, which is not just subjectively grounded.⁶⁰⁴ However, contrary to Eberhard, Pistorius is not committed to the kind of objective validity Eberhard ascribes to the a priori predicates of space. According to Pistorius, a priori predicates are merely subjectively valid concepts, grounded in the limitation of the force of representation.⁶⁰⁵ Only a posteriori concepts are objectively valid predicates. The concept of space as a multiplicity (presumably of places) for instance, is grounded in the actual multiplicity (*wirklichen Mehrheit*) of things in themselves.⁶⁰⁶ The phenomenon of space is objectively grounded, insofar as the multiplicity of places corresponds to and is grounded in the multiplicity of the things in themselves. The latter does not presuppose that the things in themselves, the simple substances, are localised in space, which means that Pistorius distances himself from the kind of physical monadology, which is implicit in Eberhard's critique.

6.5.3 Kant's Response to the Leibnizians

Let us now reconstruct how Kant might respond to the criticisms of the Leibnizians. Such a reconstruction is facilitated by the fact that Kant actually responded to the critique of Eberhard, Kästner and other contributors to *Philosophisches Magazin*.⁶⁰⁷ In my reconstruction of Kant's counterargument to the Leibnizian alternative, I will therefore use Kant's reply to Kästner in addition to the arguments already presented in the Metaphysical Exposition. Let us start with (b), i.e. the claim that the concept of space is an empirical concept.

Kant's response here is mainly concerned with the claim that the predicates of space are innate or some mixture of innate and empirical predicates. Implicitly this claim suggests that the concept of the original metaphysical space coincides with the concept of space in general (or spatiality), which is either innate or partly innate and partly empirical. The strong version of this claim is rejected by

⁶⁰² Eberhard *Von den Begriffen des Raums und der Zeit in Beziehung auf die Gewissheit der menschlichen Erkenntnis*, pp. 59-60. If phenomenal space is grounded in simple substances, but also continuous, it seems difficult for Eberhard to hold this position, and at the same time say that simple substances are in space, perhaps even as parts of space, for that would mean that they are in the continuous, which now has turned out to be an ideal property of space.

⁶⁰³ Eberhard *Von den Begriffen des Raums und der Zeit in Beziehung auf die Gewissheit der menschlichen Erkenntnis*, pp. 58-60.

⁶⁰⁴ Pistorius discusses the objective and subjective grounds of phenomena in *Erläuterungen über des Herrn Professor Kants Kritik der reinen Vernunft* von Joh. Schultze, pp. 98-101.

⁶⁰⁵ Pistorius, *Erläuterungen über des Herrn Professor Kants Kritik der reinen Vernunft* von Joh. Schultze, pp. 100-1.

⁶⁰⁶ Pistorius, *Erläuterungen über des Herrn Professor Kants Kritik der reinen Vernunft* von Joh. Schultze, p. 101.

⁶⁰⁷ Kant's critique of Eberhard was presented 1790, in the essay *Über eine Entdeckung, nach der alle neue Kritik der reinen Vernunft durch eine ältere entbehrlich gemacht werden soll*, in Ak. 8, pp. 185-271, from now on *Discovery*. For a detailed historical background to Kant's *Discovery* the reader is referred to Allison (1973).

Kant in the *Discovery*. The concept of space is acquired, not innate. Unfortunately, what Kant seems to suggest in the *Discovery* is that the concept of the original, metaphysical space is acquired in the same fashion as we acquire the concepts of geometric spaces, i.e. by virtue of constructions.⁶⁰⁸

This ambiguity is reflected in Kemp Smith's commentary, according to which Kant's *Discovery* contradicts the account presented in the *Metaphysical Expositions*, which assumes that the representation of space is innate.⁶⁰⁹ However, to me it seems that Kant's statement in the *Discovery* is largely consistent with what he says in the *Metaphysical Exposition* and in his response to Kästner (see section 6.4.4). The determinate pure intuitions of geometric spaces, which Kant describes in the *Discovery*, still presuppose an indeterminate pure intuition of the originally given, metaphysical space.⁶¹⁰

Kant does not discuss any of the details of Eberhard's criticism in the 1791 essay, since Eberhard's essay was published one year after the *Discovery*. Nonetheless, it seems as if Kant could argue that the distinction between metaphysical space and geometric space is at the heart of Kant's critique of Eberhard. From Kant's point of view, Eberhard makes the mistake of assuming that only local, geometric spaces are singular, which ignores that they are embedded in a global, all-encompassing space, which is singular. The relation between the local, objective spaces and the global space is not a relation between a superior thing and an inferior thing, but rather a relation between a superset and a subset.

Let us now turn to Kant's response to the Leibnizian thesis that space might be partly real and partly ideal (e). On this thesis, space is ideal inasmuch as it is subjectively grounded in the limit of the human faculty of representation. It is the latter, which makes us confusedly perceive space as a continuous order of coexisting phenomena. Continuity cannot be abstracted from a discrete order of simple substances, like those empirical concepts of reflection Kant discussed in the late 1760s. Continuity is a subjectively grounded, a priori predicate of space. For if space is an all-encompassing continuous whole, it also follows that space is prior its parts. According to the Leibnizians, space is possible only as a *totum analyticum*, and as already Leibniz recognised (Chapter 4), such wholes are ideal and consist of parts that are indeterminate and hence potentially infinite. Both Kant and the Leibnizians can thus agree that space is a continuous whole. It is only when we consider the conclusions from this result that disagreement begins.

For Leibnizians, like Eberhard, the phenomenal space is grounded in something real, namely in the actual space of simple substances. So far, we have seen few details of the nature of this grounding relation. However, for Kant it is clear from the outset that for Leibnizians, like Eberhard, simples cannot be thought of as the ground of space, unless it is thought of as the place of a world of simple substances. For them space is real only as the space of a *totum syntheticum*, i.e. as the space of a substantial composite of determinate and finite simple substances. As we have seen, Kant thinks this conclusion is absurd, for it makes something, which is ultimately simple, invisible, and non-sensible, a part of that which is infinitely divisible, visible, and sensible.⁶¹¹ Eberhard's defence of (e) is inconsistent with the continuity of space, which means that it must be rejected.

Recently, Falkenstein has argued that Kant's critique of Eberhard presents us to an argument for the transcendental ideality of space, which he takes to be quite independent of the *Metaphysical*

⁶⁰⁸ *Discovery*, Ak. 8, pp. 221-2.

⁶⁰⁹ Kemp Smith (1999, pp. 88-98).

⁶¹⁰ As Allison (1983, p. 95) points out "every determinate space is represented as a part or determination of the one unbounded space. This one unbounded space can be said to be 'preintuited', in the sense that it is given together with every determinate intuition as its original ground or condition. It is not, however, itself actually intuited as an object."

⁶¹¹ *Discovery*, Ak. 8, pp. 201-6.

Expositions, which Falkenstein labels the “decomposition argument”.⁶¹² On Falkenstein’s reading, the decomposition argument is designed to show that space cannot be real as the space of a substantial composite, which consists of simple parts, for space is an indefinitely divisible *totum*. The decomposition argument provides, in other words, an argument against the view that the reality of space is grounded in the reality of spatially located monads.⁶¹³ This version of the decomposition argument is, however, inadequate according to Falkenstein, since it does not exclude the possibility that space is real as an order of physical monads, which fill space by the sphere of activity of their repulsive forces.⁶¹⁴ The possibility of dividing the sphere of activity of the repulsive forces, and hence also the matter which fills space, does not threaten the indivisibility of the physical monads. Ironically, the young Kant’s arguments for physical monads are here turned against the mature, critical Kant.

To me it seems that Falkenstein identifies a weak spot in the very premise of Kant’s argument against the Leibnizian alternative (e). The possibility of physical monads endowed with repulsive forces suggests that simple substances can be localised in space without distorting the continuity and infinite divisibility of space. The mature Kant’s arguments against this possibility are also weak and inconsistent.⁶¹⁵ On the other hand, we should note that Kant presents other arguments for thinking that monads cannot be physical. First, physical monads make it difficult to explain the mind-body union (Chapter 3), and second, physical monads entail that monads are localised in space.

Effectively the second point brings us back to the quandaries of Leibniz (Chapter 2), namely if, and in that case how, it is possible for monads to be literally localised in space. Monads have a mode of coexisting with other monads by virtue of their bodies, which give them a point of view in space, but this does not immediately entail that places are real properties of the monads. Places are limits of the space continuum and hence as ideal as the continuum itself. Simple substances are not *elements* of appearances/phenomena, but their *ground*, a position which Kant now attributes to Leibniz, and which Eberhard later argued was the correct version of his own position.⁶¹⁶

However, these arguments do not rule out that there is some sort of correspondence between space and the order of coexistence of simple substances. In the “Metaphysical Foundations of Natural Science” (*Metaphysische Anfangsgründen der Naturwissenschaften*), written a couple of years before *Discovery*, Kant seems to confirm that he was fully aware of this alternative and that he did not rule it out:

Now, the composite of things in themselves must certainly consist of the simple; for the parts must here be given before all composition. But the composite in the appearance does not consist of the simple, because in the appearance, which can never be given otherwise than as composite (extended), the parts can be given only through division and thus not before the composite but only in it. Therefore, it was not Leibniz’s intention, as far as I comprehend, to explicate space by the order of simple entities side by side,

⁶¹² Falkenstein (2004, pp. 293-301).

⁶¹³ Falkenstein (2004, p. 300).

⁶¹⁴ Falkenstein (2004, pp. 300-1).

⁶¹⁵ Falkenstein (2004, pp. 300-1). For a more detailed critique of Kant’s arguments against physical monads, which Kant presents in the *Metaphysical Foundations of Natural Science*, see Falkenstein (2004, pp. 371-2), footnote 32.

⁶¹⁶ *Discovery*, Ak. 8, pp. 202-3; examples of Eberhard’s response to the Kantian critique can be found in the article *Bemerkungen über eine Recension des zweyten Stücks dieses phil. Mag. in der Allg. Litt. Zeit. N. 90 dieses Jahres*, published in *Philosophisches Magazin* 1789, p. 52.

but rather to juxtapose this order as *corresponding to space* [my italics, J.J.] while yet belonging to a merely intelligible (for us unknown) world. And this is to assert nothing other than what was pointed out elsewhere, namely, that space, along with the matter whose form space is, comprises not the world of things in themselves but only the appearance of such world, and is itself only the form of our external sensible intuition. (*Metaphysical Foundations of Natural Science*, pp. 55-6, Ak. 4, pp. 507-8)

The lesson then would be that the expositions of the concept of space only show that there exists a *numerical difference* between space as a form of sensibility and space as a form of things in themselves (monads). When Kant declares that space does not represent any relation of things in themselves (A26a/B42a) he denies that there is a homomorphism between the spatial order of coexistence of appearances and the unknown order of coexistence of the things in themselves, but not there is a correspondence between them.⁶¹⁷

Allison has observed that a correspondence between space and the order of coexistence of simple substances commits us to the existence of a *qualitative identity* or *similarity* between them.⁶¹⁸ However, speaking about a qualitative identity or similarity between space as a form of sensibility and space as form of things in themselves is *meaningless* and perhaps logically inconsistent, something Allison thinks the proponents of the third alternative ignore.⁶¹⁹ Following Charles Parsons, one might say that Allison's argument builds on what Parsons calls the "Subjectivist view".⁶²⁰ According to this view appearances are not distorted pictures of things in themselves, but ontologically different from them, in the sense that they do not exist as mind-independent objects, but only as representations. Since space and time are forms or determinations of these representations, one cannot ascribe them to things in themselves, without making a "category mistake".⁶²¹

To me this argument does not appear to be entirely convincing: it seems to build on the assumption that it is logically impossible for two numerically different things that are essentially different to have some properties that are identical. For instance, the line I draw on a blackboard is essentially different from the line I draw in my imagination, in the sense that the first is objectively real (material) and the other is not. But from this it does follow that the lines cannot share certain properties, for instance the property of representing what universally belongs to a line, etc. To say that it is meaningless to talk about shared properties or similarities seems relevant only in the sense that we cannot determine whether it is true.

Although things in themselves are *not* localised in space and *not* parts of the phenomenal world they are in a sense "localised" in the presence of God (as Malebranche would express it). The numerical difference between space and God does not exclude that there is a certain similarity or analogy between the former and the latter. For the local omnipresence and the mathematical infinity of space certainly resembles the virtual omnipresence and metaphysical infinity of God. Moreover, there is a correspondence between the order of the monads in the presence of God and the order of

⁶¹⁷ Perhaps it is more accurate to say that there is a correspondence between phenomena and noumena, rather than between their orders of coexistence. On De Risi's (2007, pp. 326-7) interpretation both Leibniz and Kant assume that there is a mapping from noumena to phenomena, but contrary to Leibniz Kant denies that this mapping is structure preserving, that is, according to Kant there is not even a partial isomorphism (homomorphism) between the spatial order between phenomena and the order of coexistence between the noumena.

⁶¹⁸ Allison (1983, pp. 111-113).

⁶¹⁹ Allison (1983, pp. 111-113).

⁶²⁰ Parsons (1999, p. 85).

⁶²¹ Parsons (1999, p. 85).

the appearances (some of which are bodies of monads) in space, as Kant admitted in the beginning of the 1790s. It is thus not meaningless to speak of a similarity between space and God, in terms of an analogy. Some of the knowledge we have in transcendent speculative metaphysics is therefore synthetic, namely insofar as it depends on *analogies* rather than analyses of concepts or definitions.

Given that this assessment of the situation is correct, it seems to leave much Pistorius' version of alternative (e) intact. But what about Pistorius' version of (b)? We have seen (Chapter 5) that Kant presents an argument against (b) already in *Inaugural Dissertation*. The original representation of space cannot be an empirical concept, since that would entail that the postulates of Euclidean geometry are more or less probable inductive generalisations, not universal truths in the strictest sense. That is not the case, however, for according to Kant the postulates of Euclidean geometry are necessary, a priori and synthetic truths. This also goes to show that space cannot be a property of things in themselves. For according to Kant Euclidean geometry cannot say anything about the spatial properties of objects, which is universally and necessary true, unless these properties are produced in agreement with Euclidean geometry. Kant's argument from Euclidean geometry does not strictly belong to the Metaphysical Exposition, however, but to the Transcendental Exposition, which will be discussed in some detail in the appendix below.

Appendix. Guyer and the Transcendental Ideality Claim

In his book *Kant and the Claims of Knowledge* Guyer presents an alternative interpretation of the transcendental ideality claim, in which the non-spatiality of things in themselves (A26a/B42a) figure as a *premise* and *not a conclusion* of Kant's arguments for this claim.⁶²² According to Guyer it is the non-spatiality of the things in themselves, which entails the subjectivity of the form of sensibility, and not the other way around:

(...) that Kant's inference is from the nonspatiality of things in themselves to the subjectivity of the necessary forms of representation, rather than vice versa, is evident from prominent passages in Kant's published work as well as from several key passages in his unpublished remains.⁶²³

Guyer's interpretation is based on Paul F. Strawson's contention that "the transcendental subjectivity of space rests on no other discernible support that [sic] that provided by the argument from geometry."⁶²⁴ In summary, Guyer's so-called epistemological argument says that the possibility of a priori, necessary knowledge of space, entails that space cannot be a property of things in themselves. The thesis that space is an a priori representation and that we have a priori knowledge of space does not immediately underwrite the conclusions from the Metaphysical Expositions (A26a/B42a), namely that space is not a property of things in themselves and merely subjective – unless we insert an additional, minor premise.⁶²⁵ More specifically, Guyer argues, this involves an argument from the nature of Euclidean geometry to the ideality of space.

In order to follow Guyer's reconstruction of Kant's conclusion we have to consider how Kant thinks that Euclidean geometry might demonstrate that space is a pure intuition, and how this might

⁶²² Guyer (1987, p. 342).

⁶²³ Guyer (1987, p. 355).

⁶²⁴ Strawson (1966, p. 277).

⁶²⁵ Guyer (1987, pp. 348-9, 355).

provide an argument for the transcendental ideality of space. Kant discusses the connection between Euclidean geometry and the pure intuition of space in a section with the title “The Transcendental Exposition of the Concept of Space” (*Transzendente Erörterung des Begriffs vom Raume*). In the Transcendental Exposition, Kant proceeds regressively from the synthetic expositions of Euclidean geometry to the pure intuition of space. Thus, in the Transcendental Exposition Kant argues that space is a necessary condition for the validity of all propositions of Euclidean geometry, such as for instance the proposition that space has three dimensions, that a sum of every two sides of a triangle is greater than the third side, etc.⁶²⁶

Space is not just the ground, which underlies the empirical intuitions and appearances, but also a universal condition of the constructions of Euclidean geometry, without which there would be no synthetic knowledge a priori in mathematics. The Metaphysical Exposition, which proceeds progressively from an analytic exposition of the concept of space, can be completed by an argument, which more literally rests on a synthetic exposition.⁶²⁷

The argument of Kant’s Transcendental Exposition goes from the validity of Euclidean geometry to the conclusion that space must be a pure intuition:

Geometry is a science which determines the properties [*Eigenschaften*] of space synthetically, and yet *a priori*. What, then, must be our representation of space, in order that such knowledge of it may be possible? It must in its origin be intuition; for from a mere concept no propositions can be obtained which go beyond the concept – as happens in geometry. Further, this intuition must be *a priori*, that is, it must be found in us prior to any perception of an object, and must therefore be pure, not empirical, intuition. For geometrical propositions are one and all apodeictic, that is, are bound up with the consciousness of their necessity; for instance, that space has only three dimensions. Such propositions cannot be empirical or, in other words, judgments of experience, nor can they be derived from any such judgments. (B40-1)

Thus, geometric knowledge has to be synthetic, a priori and apodictic. It must be knowledge from an intuition, for we have no synthetic knowledge solely from concepts; I cannot have a clear and distinct concept of a straight line, unless I represent what belongs to the possibility of such an object, which depends on the construction of the shortest line between two points. And these constructions are a priori formal intuitions, from which it follows that they precede and are independent of any empirical intuitions and cannot be reduced to such intuitions.⁶²⁸ Thus, there are no geometrical propositions unless it is possible to *visualise* the spaces, which they describe in a formal intuition a priori. If space could not be visualised in a determinate pure intuition, no axioms of Euclidian geometry would be possible, according to Kant.⁶²⁹

⁶²⁶ A25/B39, B41. As a further example of a geometrical axiom Kant mentions the axiom that there is only one straight line between a pair of points, etc.

⁶²⁷ As Paton (1997a, p. 130) expresses it, the Transcendental Exposition moves regressively and analytically from the conditioned to the condition. The Metaphysical Exposition on the other hand is progressive and passes from the condition to the conditioned. More exactly, the Transcendental Exposition involves the “explanation of a concept, as a principle from which the possibility of other *a priori* synthetic knowledge can be understood”, or in other words the explanation of how we can have axiomatic geometrical knowledge from the pure intuitions of space.

⁶²⁸ Pure intuitions can never be derived from experience; a pure intuition is always an original representation (*ursprüngliche Darstellung*). *Anthropologie* §28, Ak. 7, p. 167.

⁶²⁹ The claim that the original space is Euclidean is perhaps not Kant’s most interesting or convincing claim. More important and less time bound is his claim that space, constitutes some kind of Euclidean *reference system*, a presupposition without which there would be no perception of experience of things and their properties or states.

According to Guyer, the peculiar nature of the truths of Euclidean geometry – there are no other geometries to be reckoned with according to Kant – is thus the sole basis of Kant’s challenging conclusion that space does not exist independently of our minds. The premise of this claim is that the truths of Euclidean geometry are necessary and not contingent, as we have seen.⁶³⁰ Guyer argues that this means that Kant takes Euclidean geometry to be true of an object if and only if it is necessarily true of the object, i.e. if and only if it necessarily exemplifies the spatial properties ascribed to it. The latter does not follow, Guyer continues, except on the supposition that the mind “imposes” the spatial form on the objects. Presumably, this makes the necessity of Euclidean geometry “absolute”, in the sense that it is not conditioned by the restriction our sensibility puts on the objects we perceive.⁶³¹

Guyer summarises Kant’s view by formulating the following two alternative versions of the necessity that belongs to the spatial properties of an object:⁶³²

(1) Necessarily, if we are to perceive an object x then x is spatial and Euclidean.

(2) If we perceive an object x , then necessarily, x is spatial and Euclidean.

On the first alternative, our sensibility necessarily filters out objects which are not spatial, but it does not filter out objects which are contingently spatial, including contingently spatial things in themselves. Only the second alternative can therefore satisfy Kant’s demands of absolutely necessary truths in Euclidean geometry, according to Guyer. From this Kant infers that things in themselves cannot be ascribed any spatial properties, for in that case our knowledge of these properties would be contingent and based on experience.⁶³³ The propositions of Euclidean geometry would then have to be synthetic and a posteriori, which they are not.⁶³⁴ There is no third alternative: to say that we know the spatial properties of objects, both contingently and necessarily is absurd according to Kant:

On Kant’s conception, spatiality cannot be necessarily true of some objects (representations) and contingently true of some others (things in themselves), for then it is not necessarily true of any objects at all; if it is to be necessarily true of any objects at all, it must be necessarily true of all objects of which it is true. Since we cannot assert that spatiality is necessarily true of things in themselves – but can assert that it is necessarily true of some objects – it thus follows that it is not true of things in themselves at all.⁶³⁵

Hence, it must be impossible for things in themselves to be in space.

The epistemological argument Guyer presents thus makes the transcendental ideality of space into an implication of the a priori and necessary nature of our knowledge of space and the spatiality of the objects we experience. The argument makes a case for Kant’s transcendental ideality claim, but in all it fails to do its job. Thus, Kant has no sound argument for the claim that the truths of Euclidean

⁶³⁰ Guyer (1987, p. 359).

⁶³¹ Guyer (1987, p. 361).

⁶³² Guyer (1987, p. 364).

⁶³³ Had space been a property of things in themselves, there would have been no intuition of space prior to the empirical intuition of space as a property of things in themselves, as Kant argues in the first paragraph of the conclusions.

⁶³⁴ Guyer (1987, p. 364).

⁶³⁵ Guyer (1987, pp. 366-7).

geometry are absolutely true, as against the alternative view that the truths of Euclidean geometry are hypothetical necessities, i.e. the view that Euclidean geometry is true of all external objects we perceive, just because our sensibility filters out any object for which Euclidean geometry is not true.⁶³⁶

The trouble with Guyer's interpretation, as even those who defend it admit, is that it is extremely difficult to determine what it would be to "impose" a spatial form on an object in the context of Kant's transcendental philosophy.⁶³⁷ For implicitly this notion presupposes that Kant assumes that the mind imposes its spatial form on some sort of readymade object. It is significant that the examples invoked by Guyer, in support of his reading, are drawn mainly from passages where Kant discusses geometric objects, i.e. objects of our own making, in which nothing is given to us by the senses. However, this ignores the possibility that Euclidean geometry is necessarily true of the objects we experience, because it describes the properties of the order in which these objects are given.⁶³⁸

Furthermore, it is difficult to see in what sense it would be correct to say that the truths of geometry are absolutely necessary according to Kant, for that would make the truths of geometry into analytic truths, which is exactly what Leibniz claims and Kant denies. Perhaps we could make more sense out of Guyer's reading if we take him to say that Kant considers the properties of Euclidean space to be necessarily exemplified in the objects we experience and that this *de re* necessity is the foundation of the *de dicto* necessity of the propositions of Euclidean geometry.⁶³⁹

However, none of this entails that the truths of Euclidean geometry are absolutely necessary, for their truth would still be restricted to the subset of all worlds, which are like ours, in the sense that they have a spatial form imposed on them. To me it seems more convincing to say that Kant considers geometric propositions to be true in all worlds we can experience; they are, as Brittan puts it, true in all really possible worlds.⁶⁴⁰ This would restrict the truth of Euclidean geometry to worlds in which spatial properties of objects are conditioned by sensibility such as ours, namely a sensibility which perceives (intuits) an object only if it can orient them in the directions that are possible along the three dimensions of an Euclidean space.

Guyer also argues that Kant suggested another argument for the transcendental ideality claim, which is independent of the epistemological argument. Guyer refers to this argument as the "metaphysical argument". According to Guyer, Kant based this argument on the "philosophical prejudice" that a relation cannot be an inner property, which belongs to the thing in itself.⁶⁴¹

Given that the metaphysical argument is correct, it follows that the claim about the necessary and synthetic a priori nature of Euclidean geometry becomes something that is grounded in the claim

⁶³⁶ Guyer (1987, pp. 368-9).

⁶³⁷ See for instance Parsons (1999, pp. 86-7).

⁶³⁸ On this interpretation, the form of sensibility is not a form imposed on outer appearances, but rather a form in which appearances are given to the sensibility. We can then think of the form as an order, and the appearances as being given to sensibility, as mapped in a spatial order. Without sensibility and its form or order, the mapping would not be possible. However, sensibility does not determine the place of each appearance in the order. Using the analogy/metaphor of the form of sensibility as the order of a mapping also makes it possible to conceive how sensibility selects certain objects (noumena) and filters out certain of their relations. For a closer discussion of sensibility and its form, in terms of mappings, orders, selections, and filters, see Falkenstein (2004, pp. 424-5), footnote 4.

⁶³⁹ Guyer invites to this interpretation on a number of occasions; see Guyer (1987, p. 363).

⁶⁴⁰ Brittan (1978, pp. 81-2).

⁶⁴¹ Guyer (1987, pp. 350-2).

that things in themselves are non-spatial, rather than the other way around.⁶⁴² Indirectly the metaphysical argument also becomes an argument for Kant's claim that Euclidean geometry is necessary and a priori, which of course is linked to his a priori thesis.

In my opinion, metaphysical considerations behind the transcendental ideality claim deserve more serious attention. Moreover, Kant's metaphysical arguments should not be taken as based on the premise that no relations are real. Relations between things in themselves or noumena are real, according to Kant, but they do not make them spatially located. Implicitly the transcendental ideality claim is the claim that the relations between noumena must be distinguished from the relations between phenomena. The metaphysical arguments are hence the arguments Kant presents in favour of keeping this distinction.

⁶⁴² As Guyer (1987, p. 356) observes Kant's presentation of the transcendental ideality claim in the *Critique of Pure Reason* (A26/B42) suggests that he argued from the premise that "space is *not* a feature of things in themselves, [to] the conclusion that space can *only* be a subjective form of representation".

7. The Limits of Sensibility and the Errors of Metaphysics

The discussion so far has dealt with Kant's attempt to demonstrate the transcendental ideality of space from the conclusions of the expositions of the concept of space. Space is valid with respect to outer appearances only. This conclusion also accords with the ambitions of the plan Kant presented in his letter to Lambert where he declared that the Transcendental Aesthetic ("phenomenology") must determine the limit of the use of the principles of space and time with the purpose of preventing them from being "confusedly applied to objects of pure reason, as has heretofore almost always happened."⁶⁴³

In this chapter, I will try to link this part of Kant's critique with his discussion of transcendental reflection. Kant conceives transcendental reflection as a reflection on the origin of representations in either sensibility or the understanding. Transcendental reflection on the origin of representations, in either sensibility or understanding, makes it possible to isolate and analyse the pure form of sensibility, which is exactly what the Transcendental Aesthetic tries to accomplish. Transcendental reflection keeps the contribution from the pure forms of sensibility apart from the contributions which originate from the forms of the understanding. Without this fundamental distinction, sensible forms are easily taken for logical forms, which leads to a migration of spatial and temporal predicates to the noumena. The concepts of phenomena end up becoming confusedly applied to noumena, which distorts them and endows them with spatial and temporal predicates that do not belong to them.

For instance, if the piece of chalk is confusedly taken as a noumenon, rather than as a phenomenon, understanding will misrepresent its sensible form, and mistakenly conceive it as a logical form. As a result, the space of the chalk is misconceived as a relation between things (place), or as a mode, or an attribute of things (bodily extension). The very same mistake will also affect the use of categories and other metaphysical concepts. Instead of applying the concept of substance to what is comparatively inner in the piece of chalk, namely the repulsive force – by virtue of which it is permanent and impenetrable – understanding will try to apply the concept of substance to that which is absolutely inner in the piece of chalk. The result is that Kant's piece of chalk is misconceived as a composite of absolutely inner, simple substances.

The spurious concept of substantial composites is the fertile ground upon which rational cosmology grows. Ultimately, it tries to conceive the entire world as a gigantic composite substance, which only rational cosmology can handle. The same error, which reifies the original phenomenon of space and turns it into a property of things, now spreads to the world. Rational cosmology only lets understanding deal with the world as a thing, namely as an absolute whole of simple substances. Understanding concludes that the world is finite, but this inference is immediately contradicted by sensibility, which tells it that space is immense and inexhaustible. Infinity becomes a problem on which understanding has to brood, in a series of endless syllogisms. Rational cosmology promises everything, but only in return for understanding giving up its ambition to grasp the original phenomenon of the world in its original infinity.

The only way to overcome these errors is to make a proper distinction between sensible form and logical form, etc., so that the use of the categories can be restricted to their empirical use, with respect to phenomena, i.e. with respect to appearances in space and time, which are determinate under the transcendental schemata. Removing the metaphysical errors also restricts space and time

⁶⁴³ *Correspondence*, p. 96, Ak. 10, p. 98.

to appearances and limits them from the objects of understanding, which gives an indirect argument for the transcendental ideality of space and time. Not only does this remove the antinomies of rational cosmology, but it also helps to conceive the noumena purely, without any subreptic admixtures from spatial and temporal predicates.

For instance, conceiving the noumenal substrate of the body apart from any spatial or temporal predicates makes it possible to conceive the union between the body and the mind in accordance with the theory of physical influx, without having to assume that the soul is spatially located. For similar reasons it becomes possible to deal with the concept of God purely as the concept of a necessary being, who is virtually rather than locally present to the noumenal substances, which he continuously recreates and keeps together within the unity of the noumenal world. The theory of physical influx is merely a speculative hypothesis, but we are entitled to use it, for polemical purposes.

The disposition of the rest of this chapter is as follows. The *first section* deals with Kant's critique of the errors of Leibnizian metaphysics, which are the result of transcendental amphibolies, i.e. confusions of phenomena and noumena. *Section two* tries to connect Kant's critique of Leibnizian metaphysics with his discussion of the errors of rational cosmology and the mathematical antinomies. *Section three* deals with the subreptic concept of an extended bodily substrate and the difficulties which are generated in rational psychology because of this subreptic concept. In this way, it becomes possible to defend the theory of physical influx as a legitimate hypothesis in rational psychology. Finally, *section four* deals with how Kant applies these considerations to rational theology and the concept of God.

7.1 Transcendental Reflection and the Transcendental Amphibolies

In the *Critique of Pure Reason*, Kant explains that the Transcendental Aesthetic is an investigation not just of the origin and validity of our pure knowledge of space, but also the limits of this knowledge and hence also the limit of our sensibility:

Time and space are, therefore, two sources of knowledge from which bodies of *a priori* synthetic knowledge can be derived. (...) But these *a priori* sources of knowledge being mere conditions of our sensibility, just by this fact determine their own limits, namely, that they apply to objects only insofar as objects are viewed as appearances, and do not present things as they are in themselves. This is the sole field of their validity; should we pass beyond it, no objective use can be made of them. (A39/B56)

Knowing the limits of the forms of sensibility, and the pure knowledge which follows from these forms, makes it possible to demarcate the concepts which apply phenomena from the concepts which apply to noumena. From this it is easy to conclude that the Transcendental Aesthetic puts an end to all speculative metaphysics about noumena. However, as Freuler correctly points out, knowledge of what noumena are not is, indirectly, knowledge of the *limitation* (*limes*, *Limitation*, *Schranke*) of our knowledge of the noumena.⁶⁴⁴ We limit (*einschränken*) our speculative knowledge

⁶⁴⁴ Freuler (1992, pp. 330-1); cf. *Metaphysik Dohna*, Ak. 28, p. 644.

of noumena, by purifying it from all determinations which exclusively belong to phenomena, like their spatial and temporal determinations.⁶⁴⁵

Interestingly it is this very same act of abstraction, which indirectly opens up the possibility to limit (*beschränken*) our knowledge of noumena, by concretising it to the outer *limit* (*terminus, Grenze*), where it meets the empirical knowledge of phenomena.⁶⁴⁶ However, this deepening is merely *problematic*, in the sense that it only exhibits analytical predicates, i.e. determinations already contained in the concept of the noumenon.⁶⁴⁷ The knowledge of noumena and the limit of this knowledge is synthetic only insofar as it thinks the noumena under predicates, which are *analogous* to predicates, which otherwise apply exclusively to phenomena.⁶⁴⁸

For instance, from the analogy between the relation of coexistence of phenomenal substances (bodies) and the coexistence of noumenal substances (monads), we can conclude that noumena are situated with respect to each other. However, from this we are not entitled to conclude that they are localised in space. It is exactly this mistake which leads to the spurious concept of physical monads.

Kant gives further details to these thoughts, in an appendix called “The Amphiboly of Concepts of Reflection”.⁶⁴⁹ In this appendix, Kant discusses the concepts of identity and difference, agreement and opposition, inner and the outer, and matter and form.⁶⁵⁰ These so called “concepts of reflection” (*Reflexionsbegriffe*) are easy to recognise from his correspondence with Lambert. However, contrary to Lambert, Kant denies that the use of the concepts of reflection can be justified in the same way as the ontological concepts, i.e. categories like the concepts of substance, causality etc. Thus, according to Kant, the use of the concepts of reflection cannot be justified without a prior act of “transcendental reflection”.⁶⁵¹

Typical of the act of transcendental reflection is that it makes it possible to determine if given representations (concepts) “belong” to one and the same faculty (sensibility/understanding) or not. The difference between sensibility and understanding is not just logical, but transcendental, which means that it extends to the content and origin of the representations of sensibility and understanding, respectively.⁶⁵² Without a prior act of reflection the concepts of reflection end up becoming *misapplied*, i.e. illegitimately extended from noumena to phenomena, and vice versa. As a result there will be a “transcendental amphiboly”, i.e. “a confounding of an object of pure understanding with appearance.”⁶⁵³ In the appendix on the transcendental amphibolies Kant argues that Leibniz misapplied the concept of the absolutely inner, and that this explains why he conceived the substances as monads, for monads are the only things, which are perfectly distinguishable by their absolutely inner, perceptual states.⁶⁵⁴

According to Kant, not only the concepts of the inner and the outer, but also the concepts of matter and form, belong to the concepts of reflection. In his discussion of the concepts of matter and form, Kant accuses Leibniz of having mistakenly applied the concepts of noumenal matter and form to phenomena.⁶⁵⁵ The pure understanding identifies the matter with the essential elements

⁶⁴⁵ Freuler (1992, pp. 330-1).

⁶⁴⁶ Freuler (1992, pp. 330-4); *Metaphysik Dohna*, Ak. 28, p. 644; *Reflexionen zur Metaphysik*, Ak. 28, pp. 505-6.

⁶⁴⁷ Freuler (1992, p. 354).

⁶⁴⁸ Freuler (1992, pp. 340-5); *Prolegomena*, §58, pp. 357-8.

⁶⁴⁹ A261-92/B316-49.

⁶⁵⁰ A261-2/B317-8.

⁶⁵¹ A261/B317.

⁶⁵² B61-2.

⁶⁵³ A270/B326.

⁶⁵⁴ A265-6 /B321-2

⁶⁵⁵ A266-7/B322-3.

(*essentialia*) of a concept, which it takes to be prior to its form, the attributes and modes, which are sufficiently grounded in the essential elements.⁶⁵⁶ For instance, if the essential elements of the equilateral triangle are its three equal sides, it follows that it is possible to prove that it has three equal angles.⁶⁵⁷ The equal angles therefore belong to the form (attributes) of the equilateral triangle.

It was this alleged misapplication of the order of dependence between form and matter, which led Leibniz to conceive space, not as a formal ground of outer appearances, but as an order of coexistence, which depends on the prior existence of the monads and their perceptual states.⁶⁵⁸ Thus, if the appearances are confusedly taken as real composites of monads, it follows that their matter must be given *prior* to the form, i.e. prior to the spatial order in which appearances coexist with each other.

In Kant's terminology Leibniz made the mistake of having "intellectualised" both the phenomena and the forms of sensibility, i.e. space and time.⁶⁵⁹ Had he made a proper distinction between sensibility and the intellect, and therefore also between the phenomena and noumena, he could have avoided this mistake, but that was not possible for Leibniz, since he denied that sensibility has an intuition of its own, which cannot be reduced to a confused intellectual representation of a noumenon.⁶⁶⁰

The interesting aspect about Leibniz's misapplication of the concept of the absolutely inner and the concept of matter and form, is that it explains why he came to form a concept of spatially localised monads and a concept of material bodies/phenomena as aggregates of monads (Chapter 2). Kant's discussion of the amphibolies is hardly an accurate description of Leibniz's ontology of monads, however, since it largely ignores that Leibniz actually conceived monads as endowed with points of view rather than places in a literal sense. However, it is still possible to appreciate Kant's discussion as an attempt to explain the origin of the concept of spatially localised monads as a concept, which belongs to the same kind of subreptic concepts, Kant discussed in the *Inaugural Dissertation* (see Chapter 5). Ultimately then, the fallacy which results in the spurious concept of localised monads turns out to be a special case of the transcendental amphibolies.

The failure to recognise the limits of sensibility makes the understanding misuse concepts spatial and temporal concepts, by predicating them of things in themselves, like the noumenal world, the rational soul and God. According to Kant this mistake explains the prevalence of so called dialectical or transcendental illusions in the metaphysics of Leibniz, Wolff, and Baumgarten. These transcendental illusions are basically the result of transcendental amphibolies, and come to expression in judgments which falsely attribute a phenomenal predicate to a noumenon or alternatively a noumenal predicate to a phenomenon.

The discussion of these illusions properly belongs to the Transcendental Dialectic, not to the Transcendental Aesthetic.⁶⁶¹ The purpose of the Transcendental Dialectic is not to expose (or demonstrate) the transcendental ideality of space directly. However, the Transcendental Dialectic

⁶⁵⁶ A266/B322.

⁶⁵⁷ See Wolff, *Philosophia Prima sive Ontologia*, § 146.

⁶⁵⁸ A266-8 /B322-4.

⁶⁵⁹ A275/B331.

⁶⁶⁰ A276/B332. The outcome of this mistake is, as that space is described as an intellectual predicate which strictly only belongs to monads, namely the order of their coexistence.

⁶⁶¹ For a discussion of the origin of the transcendental illusions, see Grier (2001, pp. 108-39). On Grier's reading transcendental illusions originate in reason, quite independently of the transcendental amphibolies. To me it seems as if the transcendental illusions are intimately connected with and conditioned by the transcendental amphibolies. See also Grier (2001, pp. 177-9) for a discussion closer to the interpretation I defend.

gives an indirect argument for the transcendental ideality claim, namely by exhibiting the illusions which are produced when we consider space as transcendently real. More exactly, this argument occurs in the part of the Transcendental Dialectic, which deals with the mathematical antinomies of rational cosmology. To these antinomies I turn now.

7.2 The World and the Transcendental Ideality of Space

Interestingly, the misapplication of the concept of the absolutely inner has implications, which take us beyond the ontology of monads and phenomena, to rational cosmology. Like a domino-effect, the misapplication of the concept of the absolutely inner also leads to a misapplication of the concept of the noumenal world. The core of Kant's discussion of this misapplication is, I think, quite obvious. It deals with the subreptic concept of the world, which occurs in Wolff's and Baumgarten's rational cosmologies, because of their confusion of the noumenal world with the phenomenal world.

To get started it is helpful to consider Kant's discussion against the background of Leibniz's cosmology. Let us recall that for Leibniz, space is potentially infinitely extended and divisible. However, there are no infinite (greatest) numbers, according to Leibniz, and hence no actually infinite wholes. We have already seen (Chapter 4) that this makes it impossible to conceive absolute space as an actual (categorematic) infinite whole.

The ontological status of the world is different. The world is an absolute whole, like space, but unlike space the world is a real whole, not an ideal potentially (syncategorematically) infinite, ideal whole. Thus, if the world is an absolute whole and real, then it must be finite. However, on the subreptic assumption that the world is located in a potentially infinite space, it seems to follow that the world is surrounded by an empty space.⁶⁶²

Though there is evidence that Leibniz might have played with the idea that vacuums are metaphysically possible, there is strong evidence against thinking that he accepted the actual existence of such vacuums.⁶⁶³ This suggests that Leibniz considered the potentially infinite to be real with respect to the extension of the matter of the world. Here Leibniz could argue that a limit to the extension of the matter of the world would be arbitrary, and that God perpetually creates and adds new matter of the world, which means that the world is as unlimited as space.⁶⁶⁴

Moreover, contrary to what one might think given Leibniz's rejection of actual, categorematic infinite wholes (see Chapter 4), Leibniz fully embraced the possibility of actual infinities.⁶⁶⁵ The matter of the world for instance is not just infinitely divisible, but consists of an actual infinity of

⁶⁶² For a discussion of the arguments in favour of thinking that Leibniz recognised the possibility of vacuums, see Vailati (1997, pp. 117-120).

⁶⁶³ For a discussion of the arguments against the possibility of vacuums and a critique of Vailati's position see Futch (2008, pp. 52-6).

⁶⁶⁴ This interpretation is defended by Futch (2008, pp. 97-8).

⁶⁶⁵ Leibniz's concept of infinity, is discussed in Futch (2008, pp. 81-98).

things.⁶⁶⁶ Thus, we cannot conceive of the world as a whole, but only as an aggregate.⁶⁶⁷ However, this was not a conclusion that Leibniz's followers were prepared to make, which explains their efforts to preserve the finiteness of the world, at the expense of a proper understanding of its infinity. To see how Leibniz's followers dealt with this problem, it is helpful to outline what Baumgarten has to say about the finiteness of the world.⁶⁶⁸

Positively stated, the world is a composite, namely a series, which contains a manifold of parts and states, according to Baumgarten.⁶⁶⁹ But the world is also *one*, that is, a *whole (totum)*, namely an absolute whole, that is, a whole which is not part of another whole.⁶⁷⁰ There is no part that is not a part of the world, which means that all parts are connected with each other in an identical fashion.⁶⁷¹ The coexistence of the parts and the succession of their states is therefore ordered.⁶⁷² From this Baumgarten concludes that the parts coexist in space and that their states succeed each other in time.⁶⁷³

Negatively stated, the world is not an indefinite series in space and time, within which we can regress or progress without ever encountering any limits. Thus, Baumgarten typically argues that the world is finite, and that we can demonstrate the finiteness of the world from the principle of sufficient reason. For, according to the principle of sufficient reason, an infinite series of causally related things and states cannot exist without a ground or cause. The cause cannot be a member of the series, for in that case it will be the effect of another cause. On the other hand, the cause cannot exist outside the series, for in that case it would be an absolutely necessary first cause, which sets a boundary to the series. The world is hence not an indefinite series, in space and time:

An indefinite progression [*Progressus in infinitum*], however great it would be posited, is a contingent being. Thus, it has an efficient cause posited outside it. This [cause] cannot be a contingent being, for in that case it would once again be a being caused by another being, [and] not posited outside the progression itself, but [as] a part of it. Hence the efficient cause of the indefinite progression must be a necessary being, and independent. In whichever mode this being can exist, it exists in that mode. But it can exist, although it is not caused by another being posited outside it. Hence, it is not caused by another being posited outside it; indeed it is its first effective cause as such. Thus, the indefinite progression, which must be without first cause as such, and yet have one, is impossible and is not assumable neither in this, nor in any other world [*nec in hoc, nec in ullo mundo ponendus*].⁶⁷⁴ (*Metaphysica*, § 381)

⁶⁶⁶ Space is a whole so it cannot contain an actual infinity of parts, i.e. it is merely infinitely divisible (though not separable of course). The material content in space is nonetheless actually divided to infinity, according to Leibniz, for it is an aggregate, not a whole. The young Kant thought that the latter is impossible, since he assumed that the world is a substantial composite and hence a whole, from which he concluded that the world cannot contain an infinity of parts. The world contains a finite number of parts, namely the physical monads, which are conceivable independently all composition and therefore simple. This left Kant with no other infinity except the potential infinity of space and (presumably) time.

⁶⁶⁷ Cf. *Essai de Theodicée* §195, G VI 232.

⁶⁶⁸ To simplify the discussion somewhat I have used Baumgarten's *Metaphysica* as a source of reference, since it occurs in Kant's discussions of rationalist cosmology.

⁶⁶⁹ Baumgarten, *Metaphysica*, § 354.

⁶⁷⁰ Baumgarten, *Metaphysica*, § 354.

⁶⁷¹ Baumgarten, *Metaphysica*, § 357.

⁶⁷² Baumgarten, *Metaphysica*, § 359.

⁶⁷³ Baumgarten, *Metaphysica*, § 374.

⁶⁷⁴ My translation, J.J.

The problem with this conclusion is that it is contradicted by not only the geometer, but also the layman, who finds nothing but infinitely divisible composites in the visible world (*mundus adpectabilis*), in which he lives. For instance, the continuous lines, which can be constructed in the imaginary space of geometry, seem to be indefinitely divisible (contrary to space); likewise there seems to be no end to temporal progression. However, in reality the mathematical infinity of space and time is merely an imaginary property. Baumgarten summarises this aspect of rational cosmology by pointing out that the mathematically infinite is an ideal, imaginary property, which only signifies that the magnitude of the world is immensurable *for us*:

Thus the thing which has a maximum degree of reality, or the most real, is infinite, [and] everything else is finite. The finite, whose limits we neither can, nor want to determine is *indefinite* (that is to say, the imaginary, mathematically infinite).⁶⁷⁵ (*Metaphysica*, § 248)

Kant's discussion of the fallacies of the rationalist concept of the world is intimately connected with the amphibolies of the concept of the absolutely inner, which was discussed above. Once we have "intellectualised" the phenomena, as Leibniz did, it becomes easy to "intellectualise" the phenomenal world, by conceiving it as an absolute whole of simple parts (monads), as Baumgarten did. The problem with this is that the phenomenon of the potential infinity of the world is lost. The phenomenal world succumbs to the noumenal world of monads. In particular, it becomes difficult to conceive the world as a unity of causally interacting substances, for the forces of the monads do not act outside themselves, on their own bodies and on the bodies of other monads.⁶⁷⁶ The perceptual states of the monads are correlated in accordance with the theory of the pre-established harmony, but not causally connected. The unity of the world is idealised so to speak – the world is one only in thought.

We can gather further information about how Kant conceived of the fallacies of rational cosmology from his discussion of the two mathematical antinomies in the *Critique of Pure Reason*.⁶⁷⁷ This discussion is based on the observation that rational cosmology fails to distinguish between the world as an absolute whole of simple substances (the noumenal world) and the world as a given whole of appearances (the phenomenal world). This leads to a misapplication of the concept of the noumenal world to the phenomenal world, which makes us distortedly conceive of the phenomenal world not as a potentially infinite whole, but as an actually finite or actually infinite whole. Since we can conceive of the world as finite/infinite both regressively and progressively, the outcome is that rational cosmology becomes entangled in two mathematical antinomies, namely the antinomy between the world as finitely and infinitely extended in space, and the antinomy between the world as finitely and infinity divided in space.

In the thesis of the First Antinomy, Kant explores the possibility of conceiving of the world as finitely extended.⁶⁷⁸ Kant assumes that an infinite whole in space could be "given" only through an infinite successive synthesis (addition) of its parts in time, which is impossible.⁶⁷⁹ The world must

⁶⁷⁵ My translation, J.J. Like all composites the world is extended, i.e. it has a magnitude in space, but since the world is real and all real magnitudes are finite, it follows that the magnitude of the world and its space must be finite. For Kant this passage must have suggested that there is something suspicious, either about the notion of space as something real, namely the order of coexistence, or about the world as a *totum reale*.

⁶⁷⁶ A274-5 / B330-1.

⁶⁷⁷ A426-44 / B454-72.

⁶⁷⁸ A426/B454.

⁶⁷⁹ A426/B454; A428/B456.

therefore be finitely extended, which grants the preservation of the world as an absolute whole in space.

The antithesis of the First Antinomy, on the other hand, conceives of the world as infinitely extended in space.⁶⁸⁰ Given that we accept the assumption that space is actually infinite together with the thesis, that the world is finite and limited, it follows that the world must be limited in space.⁶⁸¹ Thus, the world cannot be limited *in* space, unless it is related *to* space, that is, unless it is surrounded by empty space. In other words, the world becomes engulfed by an absolute space, but since absolute space is nothing but a form of outer intuition, it would have to be related to nothing, which is absurd.

The thesis of the Second Antinomy describes the world as a substantial composite, which everywhere consists of simple parts.⁶⁸² This grants that the world is finitely divisible, since it is a whole, which consists of a finite number of parts. In the proof of the thesis Kant rehearses an argument familiar from the *Physical Monadology* (Chapter 2), namely that composite substances consist of simple parts, for otherwise there would be nothing left of the substances when everything composite is taken away from them.⁶⁸³

In the antithesis of the Second Antinomy, it is stated that there are no simple parts, neither in the bodies nor in the world.⁶⁸⁴ Indirectly, the antithesis entails that the world is infinitely divisible, because it is a whole which consists of potentially infinite parts. In the proof of the antithesis, Kant argues that space contains nothing but complex parts, and that there is an equality between the parts of space and the parts of the world. From this, it follows that the parts of the world cannot be simple, unless they are complex, which is self-contradictory.⁶⁸⁵

On a closer examination, however, it turns out that none of these incompatible predicates are true of the phenomenal world. Thus, once we recognise that the concepts of an actually finite or infinite magnitude can be true only of the noumenal world, we have a key to the solution to the mathematical antinomies.⁶⁸⁶ Hence, both the concepts of finite and actually infinite extension are false when predicated of the phenomenal world. The same observation also holds for the concepts of actually finite and infinite division, which are true only of the noumenal world.⁶⁸⁷ The phenomenal world is divided neither into a finite number of simple parts nor into an infinite number of simple parts, but it is only infinite in the syncategorematic sense, i.e. indefinite or potentially infinite, as to the number of its parts.

⁶⁸⁰ A427/B455.

⁶⁸¹ A427/B455.

⁶⁸² A434/B462.

⁶⁸³ A434-6/B462-4.

⁶⁸⁴ A435/B463.

⁶⁸⁵ A436/B464.

⁶⁸⁶ A503-7/B531-5.

⁶⁸⁷ A503-7/B531-5; A523-7/B551-5. To be exact it should be noted that the antithesis to the second antinomy does not say that the bodies and the world are actually divided to infinity. Thus, in the solution to the Second Antinomy, A524/B552, it is suggested that the world is infinitely divisible, but not because it is “*made up of infinitely many parts*.” However, because of the misapplication of the concept of substantial composites to appearances, the inevitable consequence of the antithesis is that the things must be conceived as actually divided to infinity, which of course is false of the appearances and the phenomenal world. Kant’s discussion of the solution to the dialectical opposition between finite and infinite numbers of parts in A505-6/B533-4 seems to confirm this. Once the antithesis is conceived in this way, it loses, ironically, its edge against the thesis, for it is perfectly possible for a body (substantial composite) to be actually divided to infinity, and yet consist of an infinity of simple substances.

To Kant this suggests the possibility of an indirect proof of the transcendental ideality of the phenomenal world.⁶⁸⁸ Given the assumption that the phenomenal world is neither finite nor infinite (which we need in order to solve the mathematical antinomies), it follows that the phenomenal world is nothing in itself. Space has no more reality than the phenomena spread out in it, for an empty absolute space cannot be real. The indirect proof of the transcendental ideality of the phenomenal world also provides us with an argument for the transcendental ideality of space.

Kant's indirect argument for the transcendental ideality claim has not been positively evaluated by Kant's commentators, like Norman Kemp Smith, to take just one example. According to Kemp Smith, Kant's proof of the thesis of the First Antinomy is flawed, because it infers that the world is finite from the subjective impossibility of *representing* an infinite whole, by an infinite synthesis (addition) in time.⁶⁸⁹ The subjective impossibility of an infinite world thus coincides with the impossibility of an infinite number.⁶⁹⁰

The proof of the antithesis of the First Antinomy fares no better in the eyes of Kemp Smith. In the proof of the antithesis Kant fails to proceed from a purely "dogmatic standpoint", implicitly presupposing the correctness of the main theses of the Transcendental Aesthetic, according to which absolute space is "nothing".⁶⁹¹ For unless one accepts that space is nothing but a form of outer intuition, as Kant does in his proof of the antithesis,⁶⁹² nothing compels us to conclude that a finite world in empty space is related to nothing.⁶⁹³

Kemp Smith also criticises the arguments which Kant presents in support of the thesis and antithesis of the Second Antinomy. In the proof of the thesis of the Second Antinomy, Kant just assumes the "Leibnizian standpoint" that the bodies and ultimately the world are real composites of simple substances, which is exactly what he attempts to prove. For if the world consists of ontologically independent parts and therefore as subjects of properties which are absolutely internal to them, it easily follows that these parts must be simple substances.⁶⁹⁴

In the antithesis, on the other hand Kant just assumes the exact opposite of the Leibnizian standpoint he presupposes in the proof of the thesis.⁶⁹⁵ Kemp Smith thus notes that Kant is basing his proof on an illicit conclusion from the continuity and infinite divisibility of space to the infinite divisibility of matter, which fills space, an argument which he had tried to overthrow in the *Physical Monadology*, and which he largely attributed to the "geometers", such as Leonard Euler.⁶⁹⁶ For short, Kemp Smith's arguments against the proof of the antithesis of the Second Antinomy are basically identical with Falkenstein's arguments against the decomposition argument.

To me it seems that commentators like Kemp Smith are justified in their critique, with some minor qualifications perhaps, particularly with respect to the Second Antinomy. However, in my opinion this does not make Kant's transcendental ideality claim less relevant as an assumption,

⁶⁸⁸ A506-7/B534-5.

⁶⁸⁹ According to Kemp Smith (1999, pp. 485-6) Kant commits the error of *ignoratio enlenchi*: "Deferring for a moment the further objections to which such procedure lies open, we may observe that Kant, in arguing from a subjective to an objective impossibility, commits the fallacy of *ignoratio enlenchi*. For when the conditions of objective existence are recognised in their distinction from those of mental apprehension, the supposed contradiction vanishes, and the argument ceases to have any cogency."

⁶⁹⁰ The concept of infinite numbers is an impossible concept according to Kant. To ascribe an infinite number of parts to the world would be the same thing as describing the world as an infinite whole, which is an impossible concept, as already Leibniz had argued in the *New Essays*.

⁶⁹¹ Kemp Smith (1999, p. 488).

⁶⁹² B457, footnote b.

⁶⁹³ Kemp Smith (1999, p. 488).

⁶⁹⁴ Kemp Smith (1999, pp. 489-90).

⁶⁹⁵ Kemp Smith (1999, pp. 490-1).

⁶⁹⁶ Kemp Smith (1999, p. 491).

which provides “critical and doctrinal advantage” in cosmology. In other words, transcendental philosophy still has the advantage that it provides us with an alternative solution to the contradiction inherent within the dogmatic, rationalistic concept of the world – without having to reduce the mathematically infinite to the true infinity of God, as Wolff and Baumgarten argued.

The concept of an absolute whole still applies to the noumenal world, which is a real composite substance – if it exists. Likewise, the mathematical infinite is an empirically valid concept, which applies to the phenomenal world, and which we cannot reduce to the concept of a finite magnitude immensurable for us. The mathematically infinite does not have to be excluded from cosmology (and ontology), but claims its place as a notion which applies to the phenomenal world. In seeing all things in the mathematical infinity of space, we see them not in the immensity of God, but in something which is analogous to God’s immensity.

7.3 The Soul and the Transcendental Ideality of Space

Kant’s discussion of the subreptic fallacies and transcendental illusions of rational psychology also provides material for an indirect argument for the transcendental ideality claim. This discussion occurs partly in his 1780s lectures on Descartes’ concept of the soul, and partly in the Paralogisms of Pure Reason. Kant’s discussion here is based on a rejection of the thesis that the noumenal substrate of the body is known to us and that we can conclude that the substrate of the body has the same properties as the phenomenon of the body, i.e. extension, motion, figure, etc.⁶⁹⁷

The result of this error is that the noumenal substrate of the body is conceived as a substance, which is heterogeneous from and unable to act immediately on the soul, much like the corporeal substance we encounter in Descartes’ metaphysics.⁶⁹⁸ Alterations in the corporeal substances are only occasions for alterations in the states of the souls, not their causes. For instance, my desire to scratch my back is just an occasion for my arm to move, but not its cause. Descartes therefore had to assume that God acts as an intermediate cause between the soul and the body. Thus, the immediate cause of the motion of my arm is God, not my desire to scratch my back.⁶⁹⁹

More generally, both occasionalism and the theory of the pre-established harmony seem to make the body superfluous for our representations of outer things. From the point of view of occasionalism and the doctrine of the pre-established harmony, it is as if we see all things in God, and not by our eyes:

The body as phenomenon is not in community with the soul, but rather the substance distinct from the soul, whose appearance is called body. This substrate of the body is an outer determining ground of the soul, but how this interaction is constituted, we do not know. (...) Descartes says: God produces representations immediately, e.g., when my eye moves. The third, namely the eye, e.g., is then wholly dispensable, because without an eye God could also produce the representations. Leibniz assumes these representations preestablished by God, that is not much better. (LM, pp. 399-400, K₂, Ak. 28, p. 758)

⁶⁹⁷ *Metaphysik Mrongovius*, Ak. 29, pp. 907-8.

⁶⁹⁸ This was, as we recollect, exactly the problem, which Kant had to face during the 1760s, see Chapter 3. See also *Metaphysik Mrongovius*, Ak. 29, pp. 907-8 and *Metaphysik Mrongovius*, Ak. 29, pp. 866-7.

⁶⁹⁹ *Metaphysik Mrongovius*, Ak. 29, pp. 866-7.

Kant recognises that the substance of the thinking mind and the substance of the body can be heterogeneous (rather than identical), but denies that this makes the interaction between them impossible, once we realise that they are heterogeneous, not because one is thinking and the other is extended and moving. For if place, extension, figure, motion, and impenetrability are mere *phenomena*, it follows that they provide no basis for making a distinction between thinking and corporeal substance, considered as noumena:

The primary difficulty that one runs up against in the explanation of the interaction with the body is that motion and thinking are so different that one cannot comprehend how the one is supposed to have an effect on the other; but the body is a phenomenon and consequently its properties are as well. We are not acquainted with its substrate. Now how this could be in interaction with the soul amounts to how substances in general can be in interaction, and the difficulty due to heterogeneity now falls away. (LM, pp. 273-4, *Metaphysik Mrongovius*, Ak. 29, p. 908)

This might seem to be a promising argument for establishing a connection between the transcendental ideality claim and the immateriality of the mind, if it had not been for the fact that Kant strongly criticises the very possibility of knowing with certainty that the mind is an incorporeal, spiritual substance. Indeed, in the Paralogisms of Pure Reason Kant denies that there is a way of proving "*I am an incorporeal substance*". The fact that I am aware of nothing composite and extended in the apperception of myself as a thinking subject does not prove that I exist as a simple incorporeal thinking substance. The latter conclusion is wrong, for once we realise that extension merely belongs to the appearance of the body, and not to the (noumenal) substrate of the body, there is nothing which excludes the possibility that this substrate is the subject which thinks:

But although extension, impenetrability, cohesion, and motion – in short, everything which outer senses can give us – neither are nor contain thoughts, feeling, desire, or resolution, these never being objects of outer intuition, nevertheless the something which so affects our sense that it obtains the representations of space, matter, shape, etc., may yet, when viewed as noumenon (or better, as transcendental object), be at the same time the subject of our thoughts. (...) For this something is not extended, nor is it impenetrable or composite, since all these predicates concern only sensibility and its intuition, in so far as we are affected by certain (to us otherwise unknown) objects. (A358)

The certainty that I am a thing that thinks, and therefore a thing with a faculty of thinking, does not entail that I have just *one* original, *primitive power*, namely the power of thinking. Likewise, it does not entail that I have just one primitive power, which produces just *one effect*, namely thinking. I may be an exclusively thinking substance, like the monads of Leibniz, but I may also be a substance endowed with corporeal powers. However, even if it is true that the thinking substance and the substrate of its body are identical, it does not follow that it is material. Thus, on the premise that space is transcendently ideal, so that phenomena can be distinguished from noumena, it follows that the extension and other spatial properties only belong to the appearance of the body, not to the substrate of the body.

The dissolution of the spurious concept of the noumenal substrate of the body does not prove that the soul acts on its body in accordance with the hypothesis of a physical influx. However, it removes the heterogeneity between the body and the soul, which once gave the occasionalist hypothesis its advantage over the hypothesis of physical influx. The hypothesis of physical influx is also easiest to square with the common-sense belief in an outer world, and our experience of

seeing things in space. We see all things in space and not in God, because our thinking minds are causally (not occasionally) connected with the noumenal substrate of a body, which *appears* as the centre from which we direct ourselves to the things, which we see in the phenomenal world. Thus, the hypothesis of physical influx turns out to be most consistent with the experience of perceiving things from a point of view in space.

7.4 God and the Transcendental Ideality of Space

We have already seen how Kant, shortly after the transcendental turn, introduced a distinction between God and space, on the basis of a distinction between two different grounds or principles of coexistence. Whereas God is the principle of the coexistence of noumena, i.e. the simple substances, space is the principle of the coexistence of phenomena. Thus, space is not the condition under which monads and other simple substances are possible; in particular, it is not the cause of their existence. For in that case it would follow that space is the ground or condition also of the existence of God, in agreement with the first postulate of subreptic axioms in the *Inaugural Dissertation*.⁷⁰⁰

In Kant's notes on Baumgarten's textbook on metaphysics and Eberhard's textbook on theology, written in the 1780s and 1790s, after the publication of *Critique of Pure Reason*, there are numerous remarks on rational theology, which confirm that Kant remained faithful to these views also during the period of transcendental philosophy. Space and time are nothing in themselves, for if they were they would become necessary beings, which condition all things, God included. As a result, God would lose his causal independence, as his actions would then be determined in time:

Would space and time be viewed as conditions of the existence of the world in itself, and the noumenal world not distinguished from the phenomenon, the causality of God with respect to the world would be determined in time, thus making God belong to the world. His causality would, through time, belong to a series of causes and effects. God [would] thus be contingent, together with all that which, with the world, belongs to a whole.⁷⁰¹ (*Reflexionen zur Metaphysik*, Nr. 5962, Ak. 18, p. 401)

The core of this mistake is that it conflates space with the omnipresence of God, which is exactly the charge Kant brought up against Newton and Clarke in the inaugural dissertation (Chapter 5). This view entails that the metaphysical concept of space is a pure intellectual idea, a concept of reason, which it is not. The necessity of space is conditioned by the omnipresence of God, not the other way around. There are no necessary beings other than God, and God is the condition not only of all contingent noumenal beings but also of the idea of space:

The things in space are all tied a priori to the condition of space. Were this something in itself, it would also be necessary and God [would] also [be] tied to the existence in it. God must be present to the things in themselves and thus also to the thinking beings and thereby make the idea of space to a necessary condition of their outer intuitions.⁷⁰² (*Reflexionen zur Metaphysik*, Nr. 6285, Ak. 18, pp. 552-3)

⁷⁰⁰ B71-2.

⁷⁰¹ My translation, J.J. Adickes dates this note to 1794-1795 or 1796-1798.

⁷⁰² My translation, J.J.

More importantly, the subreptic concept of God as an omnipresent being in space is contradictory, as Kant had argued already in the inaugural dissertation. God is conceived either as a composite substance or a simple substance which is present in more than one place at one and the same time.⁷⁰³ The former does not only make God material but it also has the consequence that the concept of the mathematically infinite is displaced from space and time to God. God's presence to the world is, however, virtual rather than local. God is immense because he is the most real (maximum), not because his presence is mathematically infinite – in space and time.

In a note on Baumgarten's *Metaphysica*, which Adickes dates to the end of the 1780s, Kant develops his thoughts about God's virtual presence, in the context of a reflection on Leibniz's theory of the pre-established harmony. In the note, Kant suggests that the pre-established harmony perhaps should be taken as the idea of an intelligible, noumenal world without space and time, in which the divine omnipresence is the principle of any real connection.⁷⁰⁴ Space is not God's omnipresence, but God's omnipresence as the form of a phenomenon, as Kant explains to his students in the beginning of the 1790s:

Space itself is the form of the divine omnipresence, i.e. the omnipresence of God is expressed in the form of a phenomenon, and through this omnipresence of God all substances are in harmony. But here our reason can comprehend nothing more. - Those who assume space as a matter in itself or as a constitution of things in themselves, are required to be Spinozists, i.e., they assume the world to be a summation of the determinations of a united necessary substance, thus only one substance. Space as something necessary would then also be a property of God, and all things exist in space, thus in God. (LM, p. 478, *Metaphysik Vigilantius*, Ak. 29, pp. 1000-9)

In sum, God is not present in space; all we are entitled to say is that God's omnipresence takes the form of a phenomenon – the phenomenon of space.

⁷⁰³ Cf. *Inaugural Dissertation*, p. 410, Ak. 2, p. 414.

⁷⁰⁴ *Reflexionen zur Metaphysik*, Nr. 5962, Ak. 18, p. 405.

8. Conclusions

The year of the transcendental turn 1769 saw a number of important ideas being brought together in Kant's mind: the idea that sensibility and the understanding must be distinguished along with phenomena and noumena, and the idea that space and time are nothing but forms of sensibility. In this study, I have tried to interpret the transcendental turn in the same tradition as Erdmann, Watkins, Jauernig, and others, who emphasize the importance of Leibnizian themes for Kant's intellectual development. Thus, I have argued that much of the deliberations behind the transcendental turn originated from problems of Leibnizian metaphysics.

Leibniz's concept of material bodies as on the one hand continuous phenomena in space, but on the other hand discrete aggregates of causally independent, embodied soul-like monads, stirred much perplexity among Leibniz's contemporaries. How is it possible for something discrete to ground something continuous, and what prevents the possibility that each monad lives in the presence of God, apart from their bodily point of view, in a world of their own? In response to these difficulties, the successors of Leibniz tried to conceive how the monads can be localised in space (Wolff) and how it is possible for them to interact with each other (Knutzen).

I have tried to argue that these considerations explain much of Kant's interest in the theory of physical influx, and his transformation of monads into physical monads. Following the suggestions of Schönfeld, I have argued that the notion of physical monads contains the seed of Kant's intellectual crisis, which found its culmination and solution in the transcendental turn. How is it possible to explain that the soul perceives everything from the point of view of its body, rather than from a particular place within the body, if it is a physical monad, rather than an immaterial, spiritual monad? On the other hand, if the soul is an immaterial, spiritual monad, which has no other place than the place of its body, how is it possible for the body to influence it?

I think that this study provides ample evidence that these questions were important in stimulating Kant's investigations during the sceptical period. Though it would be ridiculous to reduce Kant's entire 1760s discussion of metaphysics and its method to just this single question, it is important for any interpretation of Kant's early intellectual development which emphasizes the role of Leibnizian themes. From this point of view, my reading has a slight advantage over the interpretations of Kant's intellectual crisis, suggested for instance by Erdmann and Watkins.

Further support in favour of my reading is provided by Kant's interest for the distinction between sensibility and understanding, which is visible in his notes on metaphysics from the late 1760s. This interest becomes perfectly reasonable, on the assumption that Kant aimed at explaining how it is possible for the soul to be influenced by the forces of the body, without having to assume that it is localised in a separate place, apart from the place of the body. Sensibility is a passive faculty, which has a power to produce representations, insofar as it is causally influenced by the body. Otherwise, we are compelled to conclude that the bodily point of view just reflects the virtual presence and one-sided causal influence of the soul on its body, as for instance Swedenborg had argued.

In this study, I have argued that something made Kant change his mind about the possibility of sensibility, as a passive and receptive power of representation, which made him convinced that it was more than a merely speculative hypothesis. I have argued that Kant's acquaintance with Locke and Leibniz, both directly and indirectly through his correspondence with Lambert, might have been decisive for his change of attitude. There are no data which let us know the faculty of sensibility directly, but we can know this faculty indirectly, by its effects, namely our sensations. Kant had already recognised that sensations provide us with simple concepts, which are the data or matter of those indemonstrable

propositions, from which all knowledge originates. However, thanks to Kant's correspondence with Lambert, he was reminded that knowledge also has a form.

I have tried to show that Kant contributed to the tradition he assumed from Lambert, namely by arguing that the form of knowledge is not dead and passive, but itself the source of data of knowledge. There are simple concepts of form, which do not originate from sensations. The concept of space is a concept of form, contrary to what Locke and Lambert argued. One of the most important contributions of Kant in this context, was his claim that sensibility produces something more than just sensations, namely a relation to an outer object, which makes the sensations into appearances.

In the late 1760s, Kant came to argue that the orientation of the sensations contains the key to the relation between the sensations and the outer objects. Relating involves orienting the sensations in a definite direction (right/left, etc.), from a place, which coincides with the bodily point of view of the soul, which just goes to confirm that the soul has no other place than its body. Sensations are not just placed, but oriented in a direction, which makes them related to an absolute space, which cannot be reduced to a mere order of situations. In absolute space sensations are coordinated, not subordinated, which proves the point that space is a form of sensibility, not a logical form of understanding.

Space is that which lets the body appear in a place in the midst of the world, as the point of view of the soul. The point of view is a condensed point of unity between the soul and the body, but it is not their real point of contact. Space is nothing but a form of sensibility, which means that the substrate of the body is not localised in space. The latter explains how it is possible for the soul to have a sensibility, which makes it truly receptive to its body. The point of view of the soul is an expression of a unity, which depends on a causal interaction between the soul and the body, in agreement with the theory of physical influx. The soul lives in the presence of God, but sees nothing in the world, apart from its bodily point of view and the real unity it expresses, which makes it impossible for the soul-monad to live in a world of its own.

In this study, I have tried to defend Kant against École's accusation that he just misunderstood Wolff's notion of the faculty of sensibility, by reducing it to a faculty of non-distinct representations. In fact, Wolff recognised that the representations of sensibility are singular and grounded in the sense organs, and not just obscure and confused, which Kant largely ignored. Though École's assessment contains a grain of truth, it should not overshadow the bigger picture, which is that Wolff never found a way of coming to terms with the faculty of sensibility, as a receptive faculty, which ties the soul to its bodily point of view.

With this said, it must be recognised that Kant's earliest account of sensibility and the form of sensibility, suggests an uneasy balance between sensibility as a passive and as an active power of representation. On one hand, sensibility is a passive faculty and power, which produces sensations, insofar it is causally affected by alterations in the sense organs of its body; on the other hand, it is an active faculty, a faculty of intuition, which produces determinate empirical intuitions by coordinating the places and directions of the sensations, within the unity of a definite figure.

In this study I have argued that Kant's late 1760s notes on space, as well his inaugural dissertation, gives an idea of a kind of new science of space, which later would mature into the Transcendental Aesthetic. I have tried to argue that this science partly resembles Leibniz's *analysis situs*, a kind of progenitor to later geometries of space. De Risi has pointed out that Kant adds little to Leibniz's accomplishments in this field, and leaves few leads to students who want to find suggestions which point ahead towards later discoveries of global spaces, with non-Euclidean structures, topologies and metrics. However, in my opinion this does not mean that Kant does not deal with global space, and from this point of view, he is on the same page as Leibniz.

Kant's science of space also has merits of its own. More than anyone before him, Kant consciously explored the possibility that the postulates of Euclidean geometry are true, not because they describe the structural, topological, and metric properties of any global space, but because they describe those very same properties of the global space, within which any outer objects of our sensibility have to be ordered. The postulates of Euclidean geometry are in other words transcendental truths, something that already was on the cards of Leibniz's philosophy of space.

In this study, I have tried to emphasize that there is another aspect of Kant's science of space, which merits attention, namely the critical question of the origin and validity of the concept of global space, taken as a separate theme of study. Global space cannot be gazed upon by our eye, in an empirical intuition, something even Locke and Lambert had to admit. In that respect Kant was in perfect attunement with Euler and the entire camp of the Newtonian oriented mathematicians. Euler taught that Leibnizian metaphysics had no idea of space, other than the idea of place. It is an abstract idea of a property of the body, which remains when a body is abstractly conceived, apart from everything which belongs to its nature. Conceiving a body concretely, as a body placed in relation to other bodies, which exert force on it, shows that the body is inert. Inert bodies are placed in relation to reference frames, which ultimately points towards a global space, which is absolute.

Euler concluded that the abstract idea of place, cannot be reduced to the concrete idea of place, and that the idea of space, involves the idea of an absolute space. The idea of space is not just derived by induction but depends on a deduction as well. However, neither his deduction of the idea of absolute space nor Kant's attempt to improve it, by showing that the idea of space cannot be reduced to Leibniz's idea of a situational order, are of great interest. I have tried to argue that Kant's arguments only show that the idea of space is an idea of a situational order, oriented with respect to the bodily point of view of the soul, which is attached to an observational framework.

What is interesting about Euler though is that he provides a framework, against which Kant's own late 1760s taxonomy of concepts can be viewed. It throws light on why he chose to reject, the alternative that the concept of space derives from an empirical intuition. However, it also shows why he rejected the alternative that the concept of space is an empirical concept of reflection, for such a concept can only lead to the concept of place, or more broadly, the concept of a situational order. I have tried to argue that this concept fails to capture what specifically belongs to an order of continuously diffused situations, which makes space an extended whole. Bodily extension is of no help here, because it can only represent extended wholes of separable, moving and impenetrable parts, which space is not.

I have argued that Kant's 1760s taxonomy only left him with two remaining options, namely that the concept of space is a pure concept of reflection, or a concept of pure intuition. Kant played with the idea that the concept of space is a pure concept of reflection, but finally rejected this alternative. Pure concepts of reflection extracted from the logical forms of understanding, like the concepts of subject, predicate, ground, etc., are the basis of the ontological concepts of substance, accident, etc. They cannot capture what belongs to a potentially infinite, continuous whole of indefinite parts, such as the global space. This left Kant with only one option, namely that the concept of space is the concept of a pure intuition.

Embracing the global space as a continuous whole, a *totum analyticum* immediately goes to show that space is an ideal whole, a *totum ideale*, which is one of the most important lessons of this study. Space is fundamentally different from the real substantial composites, which were cherished in the Leibnizian ontology and cosmology of Wolff or Baumgarten. The distinction between ideal wholes and real wholes is long forgotten but belonged to the basic education of any capable student in metaphysics, like the students that attended Kant's lectures, in the early 1770s. For former students and friends, like Herz, it

was an easy thing to see what place Kant's new science was coming from, and the reasons why this science had to be the science of an ideal thing and not a real thing.

Kant's new science never did develop into a geometry of space, but it morphed into a science of the origin, validity and limits of the pure knowledge of space. In a letter to Lambert, Kant initially described this science as a phenomenology, which determines the limits of the principles of sensibility, and hence prevents the application of space and time to composites of simple substances and other noumena. Space is a continuous whole, which must not be confused with a substantial composite, a point, which Lambert wholeheartedly supported. Even if the simple parts of these composites were situated with respect to each other, it would be impossible to form a concept of the order of these situations, other than one which is discrete, given the premises and conclusions from Kant's 1760s taxonomy. Instead we would have to demonstrate that continuity belongs to an order of situations, for instance in the same way as we have to demonstrate that completeness belongs to a set.

In this study, I have made the claim that the phenomenal world is a representation of the noumenal world, which ultimately is that substantial composite which Lambert had pointed out must be carefully distinguished from space. Space is the ground of all places, which lets our body appear as the point of view and centre of reference, from which all sensations appear as oriented in the direction of an outer object. It is the ground of all appearances, which brings them together within the unity of one world – the phenomenal world. Space is hence not just an ideal whole, but also a transcendently ideal ground of outer appearances.

Hopefully, this study has made it somewhat clearer that the continuity of space was a matter of outmost importance for Kant, not just to convince him of the transcendental ideality of space, and seek out the arguments for it, but also to establish the sovereignty and entitlements of Euclidean geometry, once and for all. Kant's science of space, which found its mature form in the Transcendental Aesthetic, partly in accordance with Kant's plan for a phenomenology, hailed Euclid's geometry as the highest form of science. Euclid's postulates were immediately certain and necessarily true. Kant did not wrestle with Euclid's definitions and postulates, trying to improve or prove them, as Leibniz or Lambert did. What he tried, however, was to *justify* them, by showing that there has to exist something such as a continuous and mathematically infinite space. Exists, not in the same way as a thing, but as something which everywhere penetrates our experience of outer things.

To appreciate the relevance of what Kant tried to accomplish, it is helpful to recall that Euclid's geometry is a geometry of constructions and not just a geometry of definitions. For instance, Euclid did not just define what belongs to a straight line but postulated that a straight line can be constructed between any two lines. Likewise, he did not just define a circle, but postulated that a circle with any centre and radius can be constructed. However, as Heath underscores, it is not possible to construct and prove something further by the help of these lines and circles, unless it is possible for them to intersect each other.⁷⁰⁵

Indirectly, the proofs of Euclid's propositions follow only if the existence of the points of intersection has been demonstrated from an independent principle, which needs to be postulated.⁷⁰⁶ This principle is the *principle of continuity*, which intuitively says that the line segments and circle arcs, which are used as arguments in the demonstrations, have to be *complete*, in the sense that they must be free of gaps or holes.⁷⁰⁷ The point of intersection, which divides a segment into two parts, has to exist and belong to either of the two parts.

⁷⁰⁵ Heath (1956, pp. 234-7).

⁷⁰⁶ Heath (1956, pp. 235-6).

⁷⁰⁷ Heath (1956, pp. 235-6).

For instance, in order to construct an equilateral triangle on a given straight line from A to B, it must be shown that this line describes both the radius of a circle with centre A, and the radius of another circle with centre B. The point C, in which the circles intersect, is the apex of the triangle ABC. The length of the radius AB describes of course the lengths between the respective centres and the boundaries of both circles. Hence, the length of AB equals both the length from A to C and the length from B to C, which entails that ABC is equilateral. However, this proof goes down the drain if there is a gap in C. To prevent this unhappy outcome, the proof must rely on an independent demonstration of the existence of the point C, which is exactly what the principle of continuity allows us to do.

Kant knew of course nothing of this principle of continuity – a brainchild of Dedekind and 19th century mathematics. However, he was most likely assured that he had done more than anyone before him to safeguard Euclidean geometry from those devilish, metaphysical holes and gaps in the fabric of the world, which otherwise threatened to swallow it. He had granted continuity to it, because it was a phenomenal world, grounded in the inner unity of the immediate subjective space of our outer sensibility.

Transcendental ideality is inseparable from it, for it is solely as a form of outer sensibility, that Euclidean geometry can pretend to say something a priori and necessarily of the phenomenal world, and yet independently of any measurements of it. The truths of Euclidean geometry follow neither from definitions, nor from inductions. Euclid's first postulate is true, because the shortest distance between any outer phenomena, which appear from the bodily point of view of our sensibility, is conditioned by the form of that sensibility.

In this study, I have argued that Kant fails to muster a decisive argument against Leibniz's philosophy of space. As De Risi shows, Leibniz did not have to borrow evidence for the continuity of space and the truth of the postulates of Euclidean geometry from experience. Leibniz never conceived space, merely as an order of simultaneous situations, but as a form in accordance with which situations are synthesised in our imagination. Without a synthesis of situations, there can be no perceptions of outer phenomena. Transcendental truth thus belongs to the postulates of Euclidean geometry, insofar as they describe the principles, in accordance with which situations are synthesised in outer perceptions.

However, although Kant's arguments against Leibniz fail, they point ahead towards the deeper seated reasons behind Kant's defence of the transcendental ideality claim. The transcendental ideality claim grants that simple substances cannot have a place in space, which means that they cannot become parts of the phenomena. There is nothing that limits the continuity and potentially infinite divisibility of the phenomena, according to Kant. More narrowly, the transcendental ideality claim grants that the spatial order between phenomena is not isomorphic with the order of coexistence between the noumena, i.e. the simple substances. Hence, there is no perfect one-to-one correspondence or mapping between phenomena and noumena, which guarantees that the spatial order between the phenomena faithfully preserves the order of coexistence between the noumena. Phenomena are at no point actually finitely or infinitely divided, in a way which perfectly mirrors how the noumenal substances are divided.

In Kant's late 1760s taxonomy there was still a tension between describing space, or the representation of space as a pure intuition and as a concept of understanding. Kant did not work out the distinction between the pure intuition of space and the concept of space, until the late 1770s and early 1780s. In this study, I have followed the suggestions of Fichant, Onof, Schulting, Patton and others, who emphasise that Kant made a distinction between two concepts of space: the metaphysical concept of space and the geometric concepts of space. Whereas the former concept is the concept of the immediate, originally given subjective space of our sensibility, the latter concepts are the concepts of points, curves and figures, which occur in the definitions and constructions of Euclidean geometry.

Pure knowledge of the global space, as a phenomenon originally given to sensibility, is what the Transcendental Aesthetic promises. Knowledge, which proceeds from an exposition or analysis of the metaphysical concept of space, with the purpose of showing that the original representation of space is a pure intuition. The trouble for any student of Kant, is to figure out how the metaphysical concept of space acquires its content and hence how it is linked to the pure intuition of space. In this study I have made the, perhaps, somewhat unconventional claim that Kant's method of abstraction should not be dismissed in the way generally done.

The metaphysical concept of space is the concept of form, which can be isolated only if we conceive the body, from a transcendental point of view, i.e. not as a thing in itself, but as a representation of body. From the point of view of transcendental reflection, a piece of chalk is just a representation, with a form and a matter. Its matter, dryness, whiteness, etc., which originates from sensation, can then be isolated from those elements of its form, which originate from the understanding, like substance, force, etc. This will leave us with nothing but extension and figure, which presuppose the form of sensibility, and hence the pure intuition of space, a form not originally given to the understanding.

The expositions of the metaphysical concept of space are nothing but an analysis of the extension uncovered by the method of abstraction. Contrary to commentators like Onof, Schulting, Blomme, and others, the purpose of the Metaphysical Expositions is not to exhibit those categorical determinations under which understanding thinks a thing. True, it makes sense to say that space is a quantity, a ground, a substrate, but none of this makes a discrete quantity of a real substance, like the things we experience. We know things in space, but we do not know space, in the same way as a thing.

I hope that this study has added somewhat to the understanding of the considerations behind Kant's transcendental ideality claim, from a historical point of view. However, before closing this study I think it is fitting to say just a few words about this claim, from a more contemporary point of view. For us there is little which seems to support Kant's claim. Space exists: it is the space of our physical universe. Mathematical geometry deals with ideal spaces and physical geometry decides which geometry applies to the space of the physical universe.

Historically geometry simply arose from the practical need to measure the Earth, like the area of a plot of land, or things on the Earth, like the height of a building or the distance traversed by a ship. The division between geometry and physical geometry was just an expression of the development of productive forces and private property rights, which stimulated the need for measurements in the first place. Mathematical geometry started with the need to measure real lengths, areas, volumes, etc., but soon left these rather dull issues to geographers, surveyors, etc.

Thanks to this, the specialised mathematical geometers could concentrate their efforts on points, curves, figures, etc. These spaces were constructed spaces, in the imagination and thought of the geometers. They obeyed rules of construction, codified in often inadequate definitions, as well as in postulates and axioms, borrowed from the practical experiences of measuring real spaces. For the mathematical geometers the ideal spaces in their heads were more true and real than the real spaces that were measured by surveyors, peasants, artisans, workers, engineers, etc. However, this social psychological and ideological illusion was not an ordinary illusion, or self-delusion.

Rather it was an illusion originating from the forgetfulness that is typical of societies based on a developed division of labour. Geometers simply forgot, and forget, that their ideal points are nothing but idealisations of real places. Points arise in the original act of determining the places on the Earth, the place of a statue for instance. Place de la Sorbonne is not just the place of Sorbonne, but also a reference frame, a place, which indicates the place of any object on Place de la Sorbonne, for instance the place of the statue of Auguste Comte. However, by using Place de la Sorbonne to point out the place

of the statue of Auguste Comte, Place de la Sorbonne represents the place of the statue abstractly, apart from its extension and figure, and hence in the same way as a mathematical point.

Malebranche had a fine sense for these delicate issues, when he invited his readers to imagine the measurement of a cloth, an everyday labour activity, which could be observed in any tailor shop in Paris.⁷⁰⁸ The cloth is real, and so is the ellwand, but their relation, which makes the cloth three ells, is not real. However, it is a truth and this truth we see in God.⁷⁰⁹ Developing this example somewhat, it is not difficult to see how the ellwand could represent the length of the cloth abstractly, and purely, as just a mathematical line. The truths of the mathematical line derive from the reality of the ellwand, not as a natural object of wood, but as an instrument of measurement, a fact which Malebranche only could make sense of by suggesting that we see the mathematical line, in God.

I think that Kant understood the depth of what Malebranche was looking for. Geometric truths are not truths from experience, but transcendental truths, universally valid for the things we experience and measure. Geometric truths resemble the transcendent truths of God, but they are not truths in God or truths about God. Space is not God or a property of God, but a source of transcendental truths, which makes it possible to see all things from the point of view of our body, which is exactly what this study has been about.

⁷⁰⁸ *The Search after Truth* III, ii, 6, p. 234.

⁷⁰⁹ *The Search after Truth* III, ii, 6, p. 234.

ABBREVIATIONS

Leibniz

AG *G. W. Leibniz: Philosophical Essays*, ed. and tr. R. Ariew,
D. Garber, Indianapolis and Cambridge: Hacket Publishing Company, 1989.

G *Die Philosophischen Schriften von Gottfried Wilhelm Leibniz*,
ed. C. I. Gerhard, Berlin: Weidmannsche Buchhandlung, 1875-90.

L *G. W. Leibniz: Philosophical Papers and Letters*, ed. and tr. L. E.
Loemker, Dordrecht: Kluwer Academic Publishers, 1989.

Locke

E *An Essay concerning Human Understanding*,
Oxford: Oxford University Press 1975.

Kant

Ak. *Kants gesammelte Schriften*, Berlin: Walter de Gruyter, 1902-.

LM *Lectures on Metaphysics Lectures on Metaphysics*,
tr. K. Ameriks, S. Naragon, Cambridge: Cambridge University Press, 2001.

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